Ontario Department
of Education

1971

Curriculum Guidelines
Primary and Junior Divisions

A
This document is simply a compilation of the interim revision of the P1J1 program issued beginning in 1966. Included are:

Introduction and Guide
Art
English
Mathematics
Music
Physical and Health Education
Science
Social Studies

B
The document is issued in this form, and at this time for two reasons:

1
This consolidated document is the approved Curriculum Guideline for program development in the Primary and Junior Divisions of the Public and Separate Schools of Ontario. The Programme of Studies for Grades 1 to 6 of the Public and Separate Schools, 1960, is hereby superseded.

2
In a statement on the Introduction of the Estimates of the Ontario Department of Education in October, 1970, the Minister of Education pointed out that, "In 1970-71, the prime concern of the Department's curriculum specialists will be to organize the first steps in a major updating of the current guidelines for the Kindergarten, Primary, and Junior Divisions. These steps will mark the beginning of a cyclic approach to curriculum revision in keeping with the departmental standpoint that curriculum development is a continual process."

As part of this process of a cyclical review of curriculum, teachers and other educators are requested to make recommendations for further revision of any aspect of this document. Recommendations from committees organized within school board jurisdictions may be sent to the Regional Offices of the Department of Education or to the Co-ordinator of Cyclic Review, Ontario Department of Education, Mowat Block, Queen's Park, Toronto, Ontario.

Digitized by the Internet Archive
in 2020 with funding from
University of Toronto

https://archive.org/details/curriculumguidel00onta_28

ONTARIO DEPARTMENT OF EDUCATION

CURRICULUM P1, J1

INTERIM REVISION INTRODUCTION AND GUIDE

1967

CONTENTS

FOREWORD 3

INTRODUCTION 4

RE-STATEMENT OF APPROACH — 1967 6

- The Classroom and the School 7
- Timetables 9
- Homework 11
- The Progress of Pupils 12
- Appendix 16

FOREWORD

A curriculum, in the widest sense, includes all educational activities planned by the teacher for the pupil in the processes of instruction. In order that these processes may continue to be effective in achieving the aims of education, the curriculum must keep pace with the changing needs and demands of the society for which it is designed.

The current updating of courses of study is not intended to be a major revision of the curriculum. Rather it is a re-statement of approach with an updating of certain parts of the existing *Programme of Studies for Grades 1 to 6 of the Public and Separate Schools* (1960).

This updating is but one step in a continual process of adaptation and revision. Major changes in the Kindergarten and Grades 1 to 6 programs may be expected to follow the report of the Provincial Committee on Aims and Objectives of Education in the Schools of Ontario (Hall Committee).

The Interim Revision embraces the following courses of study:

Curriculum P1, J1 — Introduction and Guide (to be used in conjunction with each of the "subject" booklets)
Curriculum P1, J1 — Art
Curriculum P1, J1 — English
Curriculum P1, J1 — Mathematics
Curriculum P1, J1 — Music
Curriculum P1, J1 — Physical and Health Education
Curriculum P1, J1 — Science
Curriculum P1, J1 — Social Studies

The provision of French in Kindergarten and Grades 1 to 6 is a matter of decision by local school boards, subject to their meeting the requirements of the Department of Education.

INTRODUCTION

The following extracts are from the *Programme of Studies for Grades 1 to 6 of the Public and Separate Schools,* issued by authority of the Minister of Education in 1937. These aims of education are still applicable, pending completion of the report of the Provincial Committee on Aims and Objectives of Education.

EDUCATION FOR DEMOCRATIC LIVING

"Two considerations must govern the framing of a program for the elementary school. The first consideration is the kind of society in which the child lives and for which he is being prepared; the second is the nature of the child's development.

"The schools of Ontario exist for the purpose of preparing children to live in a democratic society that bases its way of life upon the Christian ideal.

"Such a society aims to provide the greatest possible opportunities for the self-realization, security, and happiness of every individual in it. It attempts to secure certain basic freedoms, to maintain legal justice, to achieve economic justice, and to afford the individual opportunities to participate in all decisions affecting his welfare.

"From each individual a democratic society expects the finest service of which he is capable and a willingness to make sacrifices for the common welfare. It demands that he recognize and accept his responsibility to act not only in the interest of self but in the interest of all.

"The citizen of a democratic state lives in a society that is constantly undergoing change. He must, therefore, be able to adjust himself to new and changing conditions, and he must have the flexibility of mind that will enable him to meet changing conditions with intelligence.

"A further characteristic of a democratic society is its group organization. In order to pursue the ordinary concerns of living, people associate themselves in social groups of various forms. The family, the school class, the church congregation, the club, the circle of friends, the municipal community, workers or business associates engaged in similar pursuits, are examples of these groups; and when one speaks of a person as 'a member of society', one thinks not only of his citizenship in Canada and the Commonwealth, but of his membership in such groups as well. Members of such a society need to know how to help one another to get things done. Educators accordingly attach great importance to the development of those qualities that enable the individual 'to work with other people,' 'to get along with others,' 'to act in a socially acceptable manner,' 'to develop a socially satisfactory personality,' 'to be a good citizen.' Cooperation in a democratic group requires self-control, intelligent self-direction, and the ability to accept responsibility.

"The habit of effective behaviour in accord with the principles of democratic living must be developed over a considerable period of time, by experience and practice, beginning early in life. It cannot be developed by coercion, but must be accepted willingly as a desirable form of conduct. Nor can it be acquired from the verbal teaching of precepts. No reliance can be placed on the study of a single textbook or the setting up of a course in 'democracy' to teach the habits of democratic living. They can be learned only through meaningful social experience at the child's own age level. The program of the school must provide these meaningful social experiences in situations that require the exercise of qualities of helpfulness, self-direction, and acceptance of responsibility – qualities that enable the individual to act constructively with others in order to get things done. The school must set up for its pupils an environment in which, through use, they may learn the social techniques, derive the attitudes and beliefs, and develop the abilities and skills that social life in a democratic society requires.

THE SCHOOL'S THREEFOLD TASK

"In order that the individual may take part successfully with others in any undertaking, he must understand the requirements of the situation, accept as his own the aims and purposes of the group, and possess or learn the skills or techniques that are necessary to perform this part of the group undertaking. Similarly, for successful social living each member of society must understand the nature of the society, accept its ideals, and master those conventions and skills commonly employed in modern social life.

"The task of the school, therefore, may be regarded as threefold:

"1. The school must help the child to understand the nature of the environment in which he lives. It must help him to understand the human relationships involved in the working of his society, as well as the physical environment in which his society exists. In the Programme of Studies that follows, provision is made for growth in the understanding of the more intimate human relationship through literature; of society in its more organized forms through the social studies; of the physical environment through science and certain aspects of arithmetic.

"2. The school must seek to lead the child to choose and accept as his own those ideals of conduct and endeavour that a Christian and democratic society approves. This acceptance will depend largely upon the friendly personal relationship established between teacher and pupil, the kindly atmosphere and cooperative spirit of the school, and the purposeful manner in which the daily life of the school is conducted.

"3. Finally, the school must assist the pupil to master those abilities that are essential to living in a modern society. It must be borne in mind that the school's historic function is to provide for the literacy of the population. When it was established, it was charged with the task of teaching all the children of the community to read, write, and cipher. The growing complexity of society has increased rather than diminished the need for all its members to be able to read efficiently and critically and to make simple calculations with accuracy.

"The skills involved in communicating ideas and emotions to others and in receiving communications from them are provided for in the courses in English, Arithmetic, Art, and Music. The resourceful teacher will arrange his work so that many of the activities of the school, whether in the field of Science, of English, or of Social Studies will be organized to provide social experience."

RE-STATEMENT OF APPROACH – 1967

Expansion of knowledge makes it essential that children develop concepts of a fundamental nature and significance. The teacher's role is to provide for numerous related experiences of broad scope, high calibre, and sufficient detail to bring meaning and understanding to the pupil's realm of knowledge.

There is now a world-wide trend away from the kind of teaching that seeks only to give pupils a store of accepted information for future use. Teaching is now being reoriented to lead children in a type of activity directed toward the discovery of truth, the acquisition of meaning, and the understanding of relationships.

Activities worth inclusion in the elementary school program must be functional, real, and appropriate for the child's level of understanding.

The following extract from *Education in a Technical Age* – a report of the World Confederation of Organizations of the Teaching Profession held recently in Stockholm – gives some indication of the place of understanding in the education process.

> "Thus the fundamental demands of the technical age require the harnessing of the rational powers of the mind, and the development of transferable intellectual skills. The successful citizen of an advanced free society must be able to recall and imagine, to generalize and compare, to evaluate and classify, to analyze and synthesize, to deduce and infer. He must be able to base his choices and actions on understandings which he himself achieves and on values which he examines for himself."

When it comes to putting principles into practice, we are dealing with "curricula," "programs of studies," "courses," and "textbooks." A curriculum is all these and much else that may be devised by a teacher as activities to aid in instruction. A program of studies comprises courses. Textbooks, which usually cover subject matter to be taught in courses of study, are not, however, comprehensive. *Circular 14* makes it clear that "the list of books approved for grant purposes for use in Grades 1 to 6 has been expanded to include books that do not 'cover' an entire course. . . ."*

The successful implementation of this revised program depends upon the thousands of teachers who like children, who understand how they grow and develop, who know both subject matter and those skills needed for continued self-education and whose methods of presentation lead pupils to understanding and appreciation, knowledge and responsibility.

**Circular 14, Textbooks,* Ontario Department of Education, 1966 (p. 1).

THE CLASSROOM AND THE SCHOOL

1. It is a challenge for each teacher to provide the best possible environment for the children within his classroom, whatever its size, lay-out or equipment. With an understanding of children and how children learn, an imaginative teacher can create surroundings that are exciting, challenging and satisfying. He can promote an atmosphere of security and emotional stability where children know they are respected as persons. In such a room children develop favourable attitudes towards education and towards life itself.

2. Within each classroom there should be provision for a wide range of experiences and activities in order that children may take an active part in their own learning. Rich and varied materials stimulate curiosity, experiment and discovery. Children should do as much as possible by themselves since the more they learn through their own experiences and discoveries, the more meaningful and lasting their learning will be. An ancient Chinese maxim strikes one as very appropriate:

   I hear and I forget;
   I see and I remember;
   I do and I understand.

3. When a classroom is treated as a workshop, activities for small groups and individuals can be initiated more readily. Since movement is essential to activity, it is not enough to accommodate pupils in rows focussed on one teaching position. Furniture should be movable, and easels, blackboards, etc. should be adaptable to various teaching locations in the room. Children should help in arranging furniture and be allowed to have their say in the storing, displaying, and changing of materials. The teacher may encourage children to suggest ideas for the organization of such activities.

4. All rooms should have centres or areas assigned to specific activities and experiences. The centres change in character with the developing needs of the children. In collaboration with the class, the teacher determines the number and kinds of centres, procedures for the use of materials, and the number of children who will be involved in each activity.

   Learning centres vary in type, number and arrangement from room to room and from grade to grade. Various types of centres are suggested below:
   - a reading area with a variety of books, globes, maps, atlases, pictures, folders, brochures, newspapers, magazines, etc.;
   - an art centre with materials for drawing, painting, modelling, etc.;
   - a construction centre with a workbench, tools, and materials such as boxes, cartons, string and scissors;
   - a sand table with suitable equipment;
   - an area with a frame, a folding screen, or other equipment with which children can create such units as house, store, post office and doctor's office;
   - a mathematics centre with manipulative materials, specialized instruments, display space, etc.;
   - a centre for science activities that provides specimens, tools, materials, etc.;
   - a water centre with receptacles, measures, siphons, etc.;
   - a centre for table-top activities including educational games and puzzles and small construction materials;
   - a visual aids centre including magnetic board, flannelboards, pegboard, slides, filmstrips and projector;
   - a writing centre with materials such as lined and unlined paper, pencils, pens, felt pens, word lists, word files, dictionaries (picture and other).

   Learning centres may be considered as places where the classroom is linked with the world outside the school.

5. Displays of children's work contribute much to the attractiveness of the school. Greater interest and better learning occur when displays are changed fre-

quently and new and arresting arrangements appear. As time goes on, every child should be allowed to try his hand at arranging these displays, and learn to do it himself. Displays may be put up in appropriate places such as bulletin boards and walls which, in some cases, will have to be covered to permit the use of fasteners. However, no work should be displayed on windows since it obstructs light and interferes with the architectural design of the school.

6. The emotional climate of the room and of the school is of fundamental importance for, if the child's emotional needs are being met satisfactorily, almost everything he does will be favourably influenced. *At all times the tone of a room will be a reflection of the teacher's attitude towards children, education, and himself.* The teacher is the key factor in helping children feel that they are members of a community and that each can make a contribution to it.

TIMETABLES

1. Every teacher is called upon to make timetables. These are simply plans to ensure that children will enjoy a balanced program of studies and that they will learn with maximum efficiency. They help teachers organize their work so that the goals of the curriculum may be reached. It must always be kept in mind that their primary purpose is to help the teacher to meet the needs, abilities, and interests of the pupils.

2. Since situations differ from classroom to classroom, no two timetables in a school need be alike. Factors that affect the timetable are the ability of learners, the studies in progress, the teacher, and the location of the school. In other words, the timetable must be carefully tailored to meet the educational situation it is to serve.

3. A timetable should be flexible. It must not unduly dominate arrangements for teaching and learning. Should any phase of learning be obviously in need of more classroom time than is indicated on the timetable, this time must be made available. Should some children be attracted to a certain activity not provided for in the timetable, and the teacher considers it worth pursuing, time should be provided for it.

4. The current practice of integrating subject matter adds to the demands for flexibility of the timetable. Subjects are usually arranged separately for convenience in the classroom, but it is recognized that such an arrangement tends to be artificial. Educators have therefore proposed certain formal teaching methods such as the *project*, the *enterprise*, and the *unit* to facilitate the integration of subject matter. The timetable should make room for this by allotting large blocks of time. Below is a specific example of how a timetable may be readjusted to meet the needs, abilities, and interests in a particular classroom:

   When some of the children in a class have been found to be using English ineffectively, it is probably best not to schedule extra periods of formal English for them. Such pupils will achieve greater competence in expression if emphasis is shifted to language learning of a more direct and concrete nature involving activities such as:
   a) investigating a topic or developing a project in Social Studies or Science that requires reading, reporting and evaluating;
   b) reading additional books and magazines from the library — some of them during school time scheduled for this purpose — on any other subject in which they have a present, even if passing, interest;
   c) excursions, visits, films, etc. which, especially for students whose home language is not English, would provide a core of experiences as subject matter on which to express themselves in English.

5. Large blocks of time will also appear on the timetable for reasons other than integration of subject matter. Provision will have to be made for large and small discussion groups, trips and excursions, visits to libraries and other educational institutions, quiet reading and research, or for taking part in physical activity, including play. Periods of time of varying lengths must also be devoted to the production of literary and visual art works, to the performing arts, and to activities of special interest to particular individuals. These periods are for gaining knowledge, for enjoying varied experiences, and for producing numerous forms of original work based upon these experiences.

6. The disciplines inherent in the curriculum must, of course, be reflected in the timetable. The subjects mentioned in the program of studies are as follows: English, Physical and Health Education, Social Studies, Science, Art, Mathematics, and Music. *These*

subjects must receive regular attention. Emphasis upon particular subjects will no doubt vary to some extent from grade to grade and class to class, according to the teacher's estimation of the needs of the children.

The program provided by the school librarian in the library resource centre supports all subject areas. The program consists not only of scheduled periods, but also of unscheduled time, when children are free to use library facilities according to individual need.*

7. Flexibility in scheduling is desirable also when changing influences in society affect the curriculum. For example, the provision of time for French in the elementary school should not be affected by the rigidity of timetables.

SUMMARY

In summary, then, a timetable must provide each of the following:

— shorter periods for formal lessons in each of the subjects listed in the curriculum

— longer periods for quiet study and research, for "projects" and "enterprises" and other group work, for special excursions, for creative productions of all kinds, and for physical activity and play.

Only careful long- and short-range planning can make a practical and efficient timetable. When planning, the teacher will have to consider not only each day, but also each week, each month and indeed each year. Finally, the timetable must be continually subject to revision if it is to meet the needs, abilities and interests of developing children.

---

*A handbook with suggestions for school library development will be published in 1967.

HOMEWORK

1. "These children (pupils in the elementary school) are at a period when vital energies are largely consumed in physical development, and consequently they must have time for rest and recreation. The school has no excuse for infringing upon the right of the children to sufficient time for sleep and play and the right of the home to direct their activities outside of school hours. There can be no doubt that both of these rights are seriously encroached upon by the prescription of homework, ill-chosen in character and excessive in quantity. *For pupils in Grades 1 to 6 there is ample time during the school day to engage in the necessary activities satisfactorily without burdening them with additional school work to be done at home.**

2. This should not, of course, prevent out-of-school pursuits taken up by children in their own time as an extension of interests generated in school. But such undertakings should be on a purely *voluntary* basis and motivated by *genuine interest.*

3. In recent years, a variety of pressures have led elementary schools to increase the amount of work given to pupils. In many communities, parental concern has been one of these pressures. There have often been misinterpretations of such slogans as "Excellence," "Any child can learn anything in some intellectually honest form," and "Our children must be better educated than we were." The result has often been that children have been required to do more work, at earlier ages, in an effort to expand a curriculum already overburdened with factual material.

4. *The statement issued in 1937 is clear in its intent and still applicable.* Teachers and principals should examine their practices and, if necessary, discuss with parents the expectations that are held concerning schoolwork. But the decision should be in the best interests of children: *Children should not be deprived of their childhood.*

---

*Extracts from a circular issued under authority of the Minister of Education in April, 1937.

THE PROGRESS OF PUPILS

INDIVIDUAL DIFFERENCES

1. No two children are alike. They differ in physique, social background, emotional disposition, outlook, tastes, talents, and ambitions. They differ in the rates at which they learn. These differences must be taken into account when evaluating the progress of children in school.

2. The complex nature of personality and the learning process makes evaluation difficult. Learning should be expected to change a child's thinking, feeling, and acting. While such changes may be readily observed in the overt behaviour and actions of pupils, they are more difficult to assess in the realm of thoughts and emotions, of values, tastes, and judgment.

3. All children have the desire to gain recognition in some aspect of school activity. *The school must see to it that every child achieves success in some respect.* The sense of achievement must be put within reach of even the least responsive child. Failure to provide the climate for a pupil's expression of the best of which he is capable will likely result in frustration and consequent aggressiveness. Teachers who think more of their pupils and less of the curriculum will find something to praise in each child's work. A child, by right, has the respect of his teacher, but he needs also to feel that he enjoys the respect of his classmates.

4. It is important to emphasize that the experiences provided for in the elementary school must be designed to meet the psychological needs of the child. They must be designed also to prepare him to meet the situations that will confront him in life. They are intended to aid him in the process of becoming mature, of growing up physically, mentally, and emotionally. The best preparation that the child can have for the demands of later life is a store of individual and group experiences acquired during life at school.

5. "The variation in the attainments of children, in the rates at which they progress, in the depth or extent of the topics they explore, and in the nature of these topics make uniform, external examinations undesirable."*

MODIFYING THE GRADE SYSTEM

1. "If the organization by grades, or the practice of sending children on to a new teacher at the end of each school year, tends to prevent the children from progressing at a rate that is natural to them, or to perpetuate the evils of 'lockstep' promotion, as it may in some schools, thought should be given to modifying the grade organization."*

2. "The most frequent cause of retardation in the past has been failure to meet grade requirements arbitrarily set up, particularly in the fields of reading and arithmetic. It must be recognized that there is no set time or grade level at which every child can be expected to develop the ability to master an arithmetical process or to reach a given standard of reading achievement. The wisdom of retarding a child for a year because of failure in these respects is open to grave questions."*

3. The grade system *has* tended to prevent far too many children from progressing at a rate that is natural to them.† However, some communities have devised modifications of the grade system that have considerably reduced "failure rates." Some schools have maintained the grade system in the flexible manner in which it was originally conceived.

   A few systems are now trying flexible schemes of organization which may eventually develop into truly non-graded patterns.

**See Programme of Studies for Grades 1 to 6 of the Public and Separate Schools,* 1937

†"They're Either Too Young or Too Old," *Curriculum Bulletin No. 1,* Ontario Department of Education, 1965.

4. The interim revised courses have been outlined in a manner that will allow a wide variety of organizational patterns.

   While sequences do exist in some subjects, there is not a tightly structured series of consecutive concepts even in mathematics.

   Neither concepts nor content should be thought of as pertaining to a particular grade or set time. It follows that textbooks and other teaching materials ought not to be assigned arbitrary grade levels. Numbers on particular texts, e.g., Mathematics 4, Reader Book 3, etc., are intended as sequence designations only. Pupils should be permitted to work at their individual "points of learning," regardless of the attainments of the majority of their age group.

STANDARDS OF ACHIEVEMENT

*"The primary and junior divisions have no business with uniform standards of attainment"**

1. Since each child is different, and teaching must be adapted to individual needs, external standards requiring uniformity of achievement are unrealistic at best and cruel at worst. Progress through the elementary school must not be a matter of time schedules whereby yearly, monthly, or weekly blocks of subject-matter are laid out in a pattern against which children's achievement is measured.

2. Standards of achievement for children aged 6 to 12 should be based on the degree of mastery of concepts and *not on the time taken to achieve that mastery.* Some aspect of almost any concept can be comprehended by any child. A child who understands that 3 + 2 and 2 + 3 are really alternate ways of stating 5 has an initial awareness of the more profound concept of commutativity, but to expect him to attain mastery of that concept at a given age shows lack of sensitivity and is unrealistic. Similarly, a child who can trace and describe the trips of Marco Polo on a globe may be years away from the maturity required to understand the significance of the trips to the world of the 13th Century.

3. *Standards* are an integral part of the daily activities of pupils. They are implicit in the nature of the questions asked by the teacher, the quality of the textbooks being used, the behaviour encouraged by the social climate of the school, the type of problem-centred activities engaged in by the pupils, and the ability to reach levels of achievement on tests unrelated to time schedules.

4. Standardized tests of achievement should be used sparingly, and as only one tool in the process of evaluation. Their use should be distinct and separate from the informal short tests recommended in the section below entitled "Pass or Fail?" The principal reason for the use of a standardized achievement test is to provide a comparison against a norm. A school may be measured against a national norm, a class against a system-wide or national norm, and a child may be measured by the norm established for a school, a system, or the country as a whole.

5. The dangers of grouping several aspects of the achievement of one child into a meaningless average cannot be overemphasized. *"Overall averages" in several subjects are meaningless.* Much more preferable is the degree of individual achievement in a subject as assessed by a competent teacher.

6. *Measurement of a child's progress is primarily intuitive and subjective.* The best "tool" for measurement is observation by the teacher who knows the child, the nature of the subject matter and the psychology of children. Use of written or other kinds of performance tests must always be qualified by an understanding of their limitations.

7. Pupils who transfer from a school should have adequate records of their achievements forwarded.* Pupils who arrive at a "new" school must be given credit for what they have accomplished elsewhere. If problem-centred activity methods are in use in a school, with a wide range of materials available in each classroom, then few problems of disrupted achievement will affect a child's move from school to school.

   More important aspects of school transfers are the feelings of insecurity and loneliness that children experience in new, strange surroundings. Special attention for each child who is new to a school should include diagnostic testing, if necessary, but more importantly, careful observation and individual attention.

   Teachers who recognize that every child is different adopt flexible teaching methods that suit the transferred child as well as the others. If specific details and narrow concepts are of secondary concern in the elementary classroom, then the education of "new" pupils who have used other kinds of tests and curricula may actually be enhanced rather than hindered.

**See Programme of Studies for Grades 1 to 6 of the Public and Separate Schools,* 1937

*See Appendix A — Interprovincial Transfer Form

REPORTING TO PARENTS

1. Reporting, in the same manner as examining or testing, should be done primarily in terms of aims and objectives, and may vary with individual children. If the objective is to master the concept of addition in mathematics, then reporting on the degree to which a child has mastered that concept should be done; e.g., "John can add number combinations to approximately 14." Again, in language study: "Mary has read eight library books. Her composition has improved noticeably."

2. *It is impossible to measure the progress of children's learning on a hundred-point scale.* The assignment of "marks" using numbers gives an impression of accuracy and objectivity that is misleading to teachers, parents, and children alike.

3. Only very general comparisons should be reported or, indeed, made at all, as suggested in the preceding section "Standards of Achievement." Some such technique as the following, used once or twice a year, would help parents form a reasonable impression of their child's progress as compared to that of other pupils. Only check marks need be entered.

General Achievement

Above Average		Average		Below Average	

4. A similar section might be used for comparing the child's effort against his assumed ability.

General Effort

Above Average		Average		Below Average	

5. Comments as in section 1 above should form the bulk of any report, with the possible addition of samples of the child's work.

6. Parent-teacher discussions of a child's progress, *in terms of the aims and objectives of the courses of study,* will prove helpful to both parties. Such interviews between teacher and parent must be so routine that the child will not view them with any kind of apprehension.

PASS OR FAIL?

1. If the curriculum is properly designed, it should so fit the capacities and interests of children that they will find in the experiences and activities of the classroom a good and sufficient motive for learning. *The unwholesome pressures of examination to determine "promotion" should be removed.* A major purpose of testing is to enable the teacher to know what further work may be needed. Once this purpose is served, testing should be reduced to a minimum lest it become an interruption to the real work of the classroom. A beginning teacher should test his pupils frequently and informally in order to learn how to teach, but he should keep in mind three points: too much testing can destroy a pupil's love of the subjects; a test must not be given solely to provide marks; the nature of the tests must be varied to allow the use of many skills.

2. If tests and examinations are designed and administered carefully, they can become opportunities for improvement of learning. Faster students should not be limited by rigid standards, nor should slower students be overwhelmed by too great expectations. *The purposes of tests should be made clear to children and they must be given precise explanations of how and why the results will be used.*

3. Short tests, each concerned basically with only a single concept, are useful evaluation devices. For example, a series of questions might be arranged in order of increasing difficulty, or size, or complexity. These short tests determine the degree of a child's mastery of one topic or skill or other single aspect of a course. Both teachers and pupils make use of such instruments: teachers for the purpose of improving instruction, and pupils for self-diagnosis. A desirable attitude toward measuring their own achievement may thus be generated in pupils.

4. Another useful device is observing student behaviour and recording incidents in anecdotal form. Teachers should take account of only significant incidents when making such notes on pupils' records, *and should avoid listing misdemeanours.*

5. *It is unnecessary to devote the month of June to drill and examinations.* In June, as in September, the children should be enjoying new experiences and engaging in new activities instead of reviewing factual matter for the sole purpose of reproducing it on an examination. Some teachers find that in some subject areas, examinations are quite unnecessary.

6. The concepts of acceleration and retardation have no meaning when children are able to pursue their interests according to their own capabilities. Classrooms should allow a variety of flexible groupings of children and should contain a variety of learning materials, including textbooks, at many levels of difficulty. Under such conditions, enrichment takes place as a natural process. In the approach implied above, many facts will be learned, perhaps even more than heretofore, but the facts will be a part of the processes of learning, not the end-products of a teaching-learning-evaluating sequence.

7. *Movement from grade to grade ought not be a matter of "pass or fail" but of continuous progress.*

EVALUATING IN TERMS OF AIMS*

"The flexibility of the curriculum and the necessary abandonment of uniform examinations in the elementary grades oblige teachers to give serious consideration to appraisal. Teachers need to evaluate the results of their efforts to develop in their pupils useful *abilities*, desirable *interests*, and acceptable *attitudes*. The problem is, of course, an individual one. The teacher's evaluation must in many particulars be related to his situation. There are, however, certain general factors that may enter into any such appraisal.

"1. The teacher should be sure that his pupils are living in clean, cheerful surroundings, cultivating desirable health habits, and developing proper attitudes towards health.

"2. The teacher should satisfy himself that his pupils are acquiring skills. Do they read with ease and comprehension? Can they read aloud, recite verse, or play roles so that their auditors grasp the author's ideas and emotions? Do they express their own thoughts clearly in speaking and in writing? Is their handwriting legible? Have they reasonable facility in the use of numbers for ordinary purposes? Do they recognize good tone and sing with enjoyment? Are they gaining in power to express their ideas in some form of art? Do they play various outdoor and indoor games spontaneously?

"3. The teacher should be concerned about the interests and attitudes his pupils are developing in their work and play. Are they genuinely interested in the reading they are doing and in the activities connected with social studies and natural science? Are they thus acquiring interest in an ever-widening world and in the fuller understanding of it? Does this interest manifest itself in independent reading, in worthwhile enterprises, and in some creative form?

"4. *Only when the child has expressed in a creative, original, and personal way the skills he has acquired and the facts he has gained, has the cycle of the learning process been completed.* (Italics added, 1967.)

"5. The foregoing factors provide a starting point only for what should be a continuing study by teachers of the criteria for testing and reporting pupil progress. *Devising and revising such criteria, always in terms of aims and objectives of the curriculum, should be the purpose of in-service work by groups of teachers in every school and system.*" (Italics added, 1967.)

---

*Extract from *The Programme of Studies for Grades 1 to 6 of the Public and Separate Schools*, issued by authority of the Minister of Education in 1937.

APPENDIX

SUGGESTED INTER-PROVINCIAL TRANSFER FORM

To assist in rapid and effective placement, the principal is requested to complete this form when a pupil leaves to transfer to another school-system, particularly in the case of inter-provincial transfer. Circle appropriate items.

PUPIL TRANSFER LETTER

Date____________________

This letter is to introduce____

The information provided below is to assist you and your staff in welcoming and placing the above-named pupil in your school to his/her educational advantage.

It is hoped that this transfer letter, which has been adopted for use in provinces in Canada, will help pupils, parents and teachers to ensure the continued educational progress of students transferring from one school-system to another.

Student's Name in full________________________________Date of birth____________

Last grade *completed*______________ Date completed______________

Grade in which enrolled: K, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13.

Last date attended here________________

Approximate number of days attended this grade________________

If pupil taking other than the regular course, comment or describe:

Group placement in grade, if applicable: low____ average____ high____

Comment:____

Special class, if applicable: (describe – e.g., slow-learner, handicapped, occupational, terminal, etc.)

If applicable, type of secondary program (proposed, now being followed): university entrance, non-university entrance, vocational, technical, commercial, etc.

Comment for clarity: ______

Scholastic performance: above average average below average

Work habits: above average average below average

If identified: best subjects ______

weakest subjects ______

This pupil progressed slowly or repeated a grade,
progressed normally at a grade per year,
skipped a grade or was accelerated as follows:
(Indicate year/s and grade/s or otherwise describe)

______

Physical conditions affecting classroom seating: sight
hearing

Special interests ______

Pupil's plans if known ______

Pupil cumulative record (is available, is not available) on request.

To Principal ______ From Principal ______

School ______

Address ______

Pupil's Name in full ______

As the above-named pupil has transferred to this school please forward to me his cumulative record.

The following chart shows the subjects being taken at time of transfer, with achievement gradings and explanations of courses and levels. (List subjects, show course number if applicable, indicate grade or grades in which this course normally given. In "year of course" indicate if 1st, 2nd, 3rd, etc. year of a sequence course study, e.g., Latin-3rd (third year level Latin). *Comments are most important*. At elementary level indicate, where necessary, area or theme, e.g., British History. At secondary level indicate if course in subject is university entrance or non-university entrance, main area covered (e.g., History and Type, or Geography and Type, or combined etc.; Home Economics Foods, or Clothing, etc.; Mathematics — Algebra, or Geometry, or Trigonometry, or Vocational Mathematics, or Business Arithmetic, etc.; Science — General, or Chemistry, or Physics, etc.). Give data also to show background in subject (e.g., Chemistry 91 — Grade 11 or 12 preceded by two years' General Science in 9, 10; Mathematics 20 — Grade 10 combined Algebra, Geometry preceded by General Mathematics Grade 9).

For achievement use: 1 — above average; 2 — average; 3 — below average; 4 — fail.

Subject	Course Number	Grade Level	Year of Course	Achievement	Comments

Special comments likely to assist in most appropriate placement of this pupil on transfer:

For student in senior grades indicate: — High School Graduation
— completed
— not completed

Type of graduation (describe for clarity — Junior Matriculation, Senior Matriculation, etc.)__________

An official transcript or statement of marks or gradings for this student (is, is not) available from the Provincial Department of Education.

Principal__________ School__________
Address__________
Address__________ Province__________

ONTARIO DEPARTMENT OF EDUCATION

CURRICULUM P1, J1

INTERIM REVISION ART

1966

INTERIM REVISION / ART
GRADES 1 TO 6

Art is the expression of a personal reaction to experience expressed in organized form, or design. This definition applies in the elementary school as it does in all other areas of life.

PURPOSES OF ART EDUCATION

Art is offered in Grades 1 to 6 so that the child may learn to present his personal reactions to his own experiences in life. In doing so he becomes acquainted with the media of art and learns to handle them with a degree of skill. At the same time, he develops his perceptive abilities in relation to that part of the environment which forms the subject matter of his expression.*

TEACHING

Teaching that interferes with the personal nature of the subject matter selected or the design employed is to be condemned. *The subject matter must be the child's own and so must the design.*

These concepts rule out certain forms of so-called art work which were current in the past. Examples of such work are to be found in the use of circles, squares, triangles and the like to form snow-men, bird-houses, and so on, designed in advance by the teacher. Photographic drawing of objects is no longer considered an art activity in these grades. *No individuals in a group of children should be asked to make a similar production, whether in paint or in three-dimensional materials.*

Among the requirements of good art teaching are the following:

1 The orderly and convenient arrangement of tools and materials for distribution and return.
2 The convenient arrangement of work areas.
3 The encouragement to use unfamiliar media suitable for the stage of development of each child.
4 Motivation of children to select suitable subject matter.
5 Timely demonstration to help children progress in the personal mastery of techniques.
6 Praise and encouragement at appropriate times.
7 The arrangement of suitable displays in which all the children participate fully.
8 Encouragement of suitable discussion of the finished work.

RESULTS OF TEACHING

Good teaching will result in the production of children's art which reflects the stage of development in artistic thinking which each child has reached.

Nearly all children normally progress through the following stages, although all individual cases display some deviations from the standard pattern of behaviour:

1 random manipulation of the media;
2 controlled manipulation of the media;
3 the development of symbols;
4 the development and elaboration of symbols within an environment;
5 the development of group thinking as expressed in selected subject matter and group techniques;
6 the development of the desire to draw and paint in a realistic manner.**

It should be especially noted that the children's orderly progress through the normal stages is grossly disrupted should a teacher supply patterns or dictate designs to be used.

---

* See *Art Education in the Kindergarten*, Curriculum Division, Ontario Department of Education. This book applies to Grades 1 and 2 as it does to Kindergarten. See also *Art and Crafts in the Schools of Ontario*, another publication of the Curriculum Division.

** LOWENFELD, Viktor and BRITTAIN, W. Lambert, *Creative and Mental Growth*, New York: Macmillan, 1964 (Toronto: Collier-Macmillan), pp. 93 ff.

INDIVIDUAL MANUAL ACTIVITIES

The following are among the major art activities employing media:

1 drawing with soft pencils, conte crayons, wax crayons, and perhaps other suitable média such as "oil-stick" type crayons; picture making;*
2 painting with large and fine brushes and tempera paint, mixing media such as wax crayon and thin paint, finger painting for pattern results;
3 modelling with clay;
4 working with paper; tearing or cutting and glueing to a support; picture making; three-dimensional work;
5 making posters and displays;
6 constructing with wood and other materials; wood carving;
7 making and using puppets.

Of all the above activities, picture making is considered the most important and should receive the major proportion of time.**

GROUP WORK

Group work must be included in the art program. This involves first the "quasi-group activity", in which the youngest children initiate work individually upon the project and later pool their efforts, for example "making a village" from cut paper. The second type of group work for the older children involves pre-planning before work begins and careful group consultation as the work progresses. All the media and techniques listed under "Individual Manual Activities" may apply to both types of group work.

ART FOR SLOW LEARNERS

Slow learners in special classes as well as in regular classes are capable of creative work in art. They should frequently be challenged by such work, rather than "spoon-fed" by pattern work and copying exercises.***

ART APPRECIATION

The art work most appreciated by most young children is that which they themselves produce. Time should be spent in which children talk about their own artistic productions.

The teacher should also have interesting professional work in both two and three dimensions for them to see and to discuss. The subject matter and composition of such work should, of course, be within the scope of the children's comprehension. Some historical items concerning artists and their productions might be introduced whenever the teacher considers that such information might be profitable. From time to time, a discussion of design in two and three dimensional objects should occur.

The teacher should use standard artistic terms to help the children to develop a vocabulary of art. "Baby art talk" is not necessary. Such words as, "balance", "rhythm", the names of the elements of design, and the like, are quickly understood by children.

DISPLAY

Attractive displays of the children's work must be continually on view. The displays should be changed frequently. Every child should, from time to time, be represented in the displays. As soon as possible, the children should be taught to arrange their own displays.

Much will be learned from viewing and discussing the displays, since each piece of work will be unique. The days of rows of identical pieces dictated by teachers, and from which nothing could be gained, have long passed.

EVALUATION

Marks or grades must not be given to the children's output. Evaluation should be made privately and based upon the teacher's knowledge of the child and the progress she expects him to make as an individual. Competition between individuals producing art is greatly to be discouraged. Art must be produced for its own sake and displayed for what it can convey from one human being to another. Children do not produce art for marks or prizes but rather to convey thoughts and feelings to others.

FURNITURE AND ARRANGEMENTS

Children in Grades 1 to 6 use two- and three-dimensional materials in art. Areas are required for the storage of such materials and for the convenience of the children when they are working with them. The following are examples of such required areas: painting area on the floor for the younger children; tables for working with clay, cardboard, wood, etc.; platform for puppets; separate storage places for puppet supplies; drawing and painting supplies; paper cutting tools and supplies; paper supplies in use.

Large drying areas, as well as display areas for both two- and three-dimensional art forms are also necessary. One or two sinks are an absolute necessity. They should have hot and cold taps.

---

* See *Children and Their Pictures*, Curriculum Division, Ontario Department of Education.

** For a general description of the art program, see *Art and Crafts in the Schools of Ontario*, Curriculum Division, Ontario Department of Education.

*** *Art Education For Slow Learners*, Curriculum Division, Ontario Department of Education.

TOOLS AND SUPPLIES

The following are some of the most important tools and supplies required for art in the Kindergarten to Grade 6.

1	*brushes*	painting, flat, hog bristle, one inch to one-quarter inch wide; painting, pointed, hog bristle and sable, large (size 6 or 7), and some finer sable brushes for work in detail; paste
2	*crayons*	wax, 10 or 12 colours, black, white
3	*paint*	poster, liquid in pints or powder in pounds (white, black, yellow, blue, brown, green, red, as basic; other colours, including magenta, as luxuries, probably twice the quantity of black, white and yellow as of other colours); water colours in boxes of 8 colours
4	*paper*	roll of kraft or project roll up to 36″ wide; manilla, 12″ x 18″ for drawing and 18″ x 24″ for painting, cream or grey; coloured construction, 9″ x 12″ for cutting and 12″ x 18″ for a support for gluing and painting, all standard colours; newsprint, natural 18″ x 24″
5	*paint tins*	muffin tins with at least 6 depressions
6	*paste*	school, in quarts, individual 2 oz. jars or squeeze bottles
7	*pencils*	large, about softness of 6B
8	*work boards*	plywood 18″ x 24″
9	*scissors*	standard safety, suitable for Grades 1 to 6
10	*scraps*	scraps of all kinds are most useful; cloth, paper, cardboard boxes, tongue depressors
11	*tools*	carpentry, suitable for safety at the various grade levels

The teacher should have materials and supplies arranged in kits whenever possible. The children should be taught a cafeteria system of obtaining supplies.

PUBLICATIONS ON ART EDUCATION AVAILABLE FROM THE CURRICULUM DIVISION

Art and Crafts in the Schools of Ontario

A further statement of the aims and objects of art education in our schools will be found in this publication. The book includes a description of the picturemaking program and suggestions for carrying it out, the teaching of design, and other art activities referred to in the preceding outline. It also includes suggested methods for appraising both the teachers work and that of the pupil. The book includes references for further reading by the teacher.
Pp. ix – 62, illustrated colour, halftone.

Children and Their Pictures

This pamphlet describes the picturemaking program in the elementary school and discusses the subject matter of picturemaking, teaching methods, and the achievement of pupils at various levels of development.
Pp. vii – 16, illustrated.

Art Education in the Kindergarten

This book was prepared for the use of kindergarten teachers, but it may also be valuable for teachers of children in the primary grades. The topics discussed include types of expression to be found in the work of little children, the physical setting and the materials for art education in the lower grades, the subject matter that young learners use, and the teaching methods that are most effective with young children.
Pp. viii – 40, illustrated.

Art Education for Slow Learners

This book was prepared primarily for teachers of auxiliary classes. It may be of value to any teacher who has pupils of retarded mental development. Topics discussed include the artistic expression of children of various levels of intelligence, the subject matter in art selected by children of retarded mental development, effective teaching methods for these children, and art materials and techniques suitable for slow learners.
Pp. x – 46, illustrated.

ONTARIO DEPARTMENT OF EDUCATION

CURRICULUM P1, J1

INTERIM REVISION ENGLISH

1966

CONTENTS

INTRODUCTION 3

A. SYLLABUS 4

DIAGRAM: OVERVIEW OF ENGLISH 5

DEVELOPMENT CHARTS:
- LISTENING 7
- SPEAKING 8
- READING 9
- WRITING 11

B. SUGGESTIONS
- LISTENING 13
- SPEAKING 13
- READING 14
- The Teaching of Reading 14
- The Child's "Readiness" 14
- Initial Reading Experiences 15
- Developing Independence 16
- Reading in the Content Fields 16
- Supplementary Reading 16
- Appreciation of Literature 17
- WRITING 17
- Creative Writing 17
- Fundamental Skills 18

INTERIM REVISION/ENGLISH

INTRODUCTION

There are two main divisions in the course. The first section, entitled SYLLABUS, consists of introductory statements, aims, and summaries of language development. The second section, entitled SUGGESTIONS, outlines the kind of attitudes, methods, and materials that are necessary for achieving the aims of the course.

The suggestions are by no means comprehensive. A wealth of aids of many kinds is available or aids may be developed by teachers, by various committees and groups, or obtained from commercial sources. Handbooks, manuals, and teachers' guides can aid teachers in planning learning experiences for children. The production of curriculum guides would be a valuable in-service activity for teachers.

A. SYLLABUS

A language program must be planned to develop the total area of communication in which the skills of listening, speaking, reading, and writing are integrated. It should be based on a knowledge of the needs, abilities, and interests of the individual child, and related to his growth. The basic aim is to help each child develop his own potentiality so that he may listen thoughtfully, speak effectively, read critically, and write creatively.

The close relationships among the various aspects of the language program must be emphasized. Expression takes place through talking and writing; understanding of expression comes through listening and reading. Essential to expression and understanding is a background of concepts and experiences. Consequently, the learning experience should be developed in connection with purposeful activities closely related to the practical problems of daily life.

Large blocks of time in the daily program can provide flexibility in the purpose, kind, and sequence of language experiences. The result will be evident in the quality and richness of the ideas and feelings which the children express, and in the competence of the skills and techniques which they use in expressing them.

LISTENING

Training in listening, which is the most frequently used of the arts of language, is vital, exacting, and difficult because many children are conditioned by their experiences outside of school to disregard to a considerable extent what they hear. Obviously, a period should not be added to the day in order to give instruction in listening but the teacher must recognize the need for training in listening. He must be alert to classroom situations in which listening is needed, and must use opportunities that call for varied types of listening.

In the world today radio, recordings, movies, filmstrips, and television are significant tools of communication. If they are not explored and used well, education may miss an opportunity to take advantage of valuable teaching aids. Children need direction for developing techniques of listening and viewing. They need experience in watching and listening critically. The teacher must guide children in the use of these media just as he must guide them in the use of books.

SPEAKING

Planned instruction in effective speaking is more difficult than in any other language art because of the highly individualistic character of speech. No matter how different a child's speech may be, to him it sounds like the speech of others. Correct speech patterns are built up only when the more acceptable forms become familiar to the ear and the tongue. Acceptable patterns are learned by use and not by rule. Instruction in correct form should be based on children's errors and should be individual and specific. Content and purpose must take precedence over details of form. What a child has to say and what he experiences in the process of saying it are of major importance.

Teachers must provide an environment which challenges, teaches, stimulates, and affords opportunities for speaking. This can be achieved by a flexible arrangement of time and equipment and a maximum utilization of children's interests. It can be accomplished where there is a sincere respect for each child and his ideas.

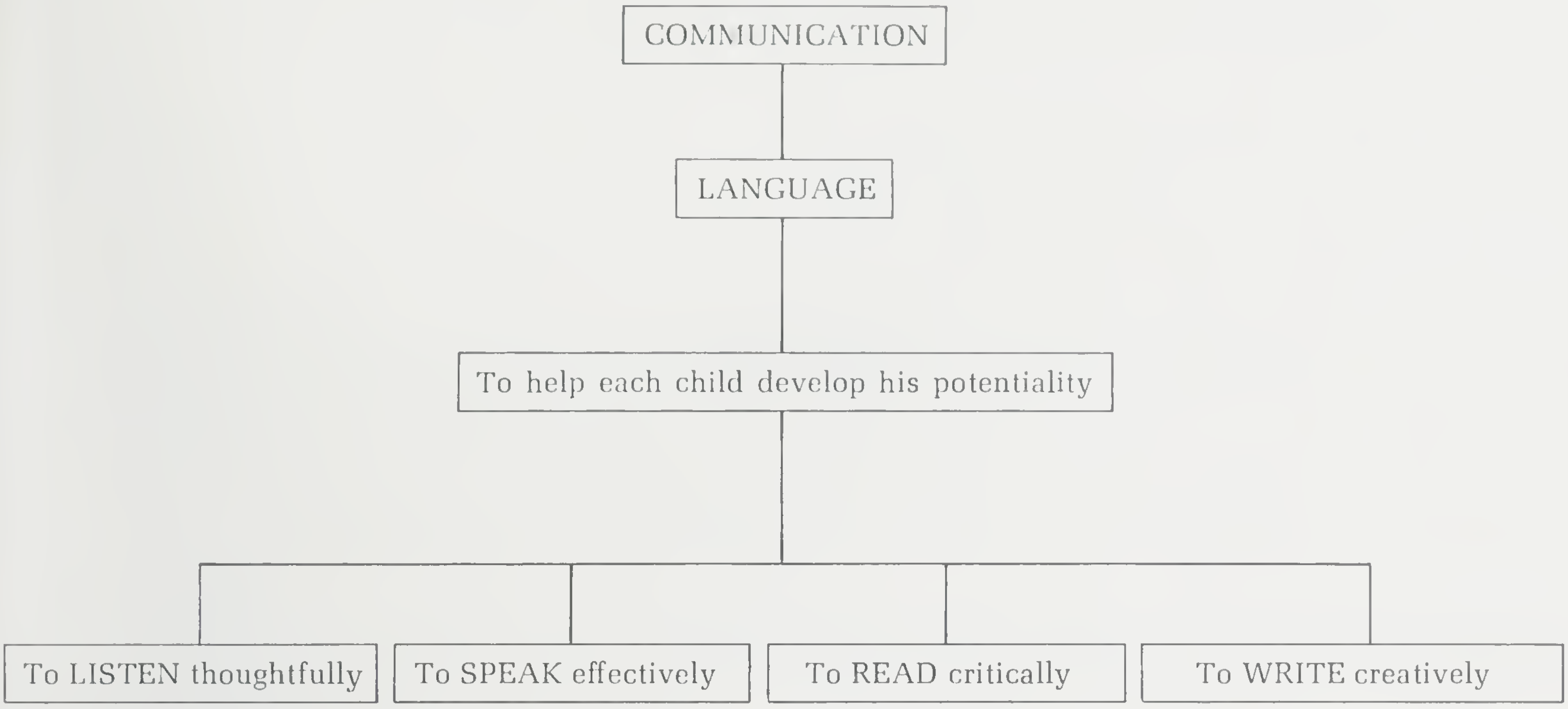
READING

The reading program begins with an understanding of word meaning and language patterns, and their corresponding symbols. As the program continues, the child learns to recognize words, phrases, and sentences, and to attach meanings which relate to his background. His understanding is enhanced through discussion which helps him to associate what he has read with the concepts he has already developed.

Children who are taught from the beginning to think about what they read, find the acquisition of word attack skills comparatively easy; but if these skills are over-emphasized, many children become so concerned with words and parts of words that they fail to understand the ideas behind the words.

Teachers have a special responsibility for presenting

ENGLISH

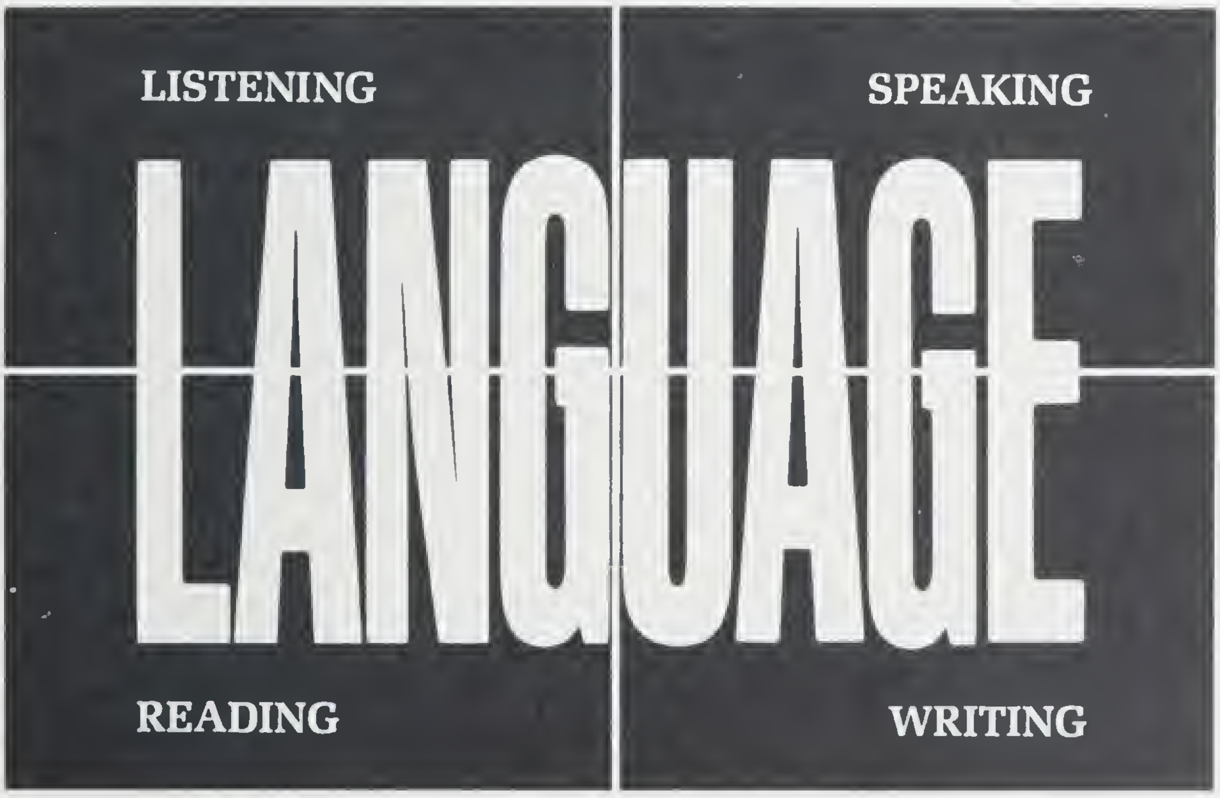


Attentive Listening
Informational Listening
Critical Listening
Appreciative Listening

Social Courtesies
Oral Communication

Basic Skills
Appreciation of Literature

Self Expression
Fundamental Skills



literature as the basic reading program goes forward. Literature provides humour, imagination, ennobling thoughts, and the lure of the beyond. It brings enrichment and new experiences. The child who has developed an appreciation of literature through reading is equipped to continue his education all through life.

WRITING

An effective language program includes an abundance of enriching and stimulating experiences, instruction in mechanics, and guidance in evaluation. It provides many opportunities for children to conclude that writing is revealing, valuable, important, and exciting.

As ability to write develops, there will be many opportunities for improvement of form and style without stifling enthusiasm and fluency. Premature or excessive emphasis on handwriting, spelling, and structure, or a failure to give a child the help he needs, can damage both his progress and attitude. When children have ideas, they will welcome suggestions and guidance for expressing these ideas clearly and accurately.

LINGUISTICS

No statement on language teaching would be complete without reference to the implications of linguistics for the elementary school.

Children should develop an enthusiasm for their mother tongue and acquire an interest in the nature of language. They should learn how language works and how it can be used.

Grammar is not an end in itself. There is no grammar outside the sentence. Words by nature do not belong to a specific class. Their function in the language unit determines their use. Consequently, children must not be bored by unrealistic grammatical identification exercises, and must not be burdened and confused by inaccurate definitions. A beginning of grammatical awareness should be made. Teachers should communicate to children the excitement and challenge inherent in the process of discovering the structure of our language. Emphasis, however, should be on socially acceptable construction – correct usage.

ORGANIZATION

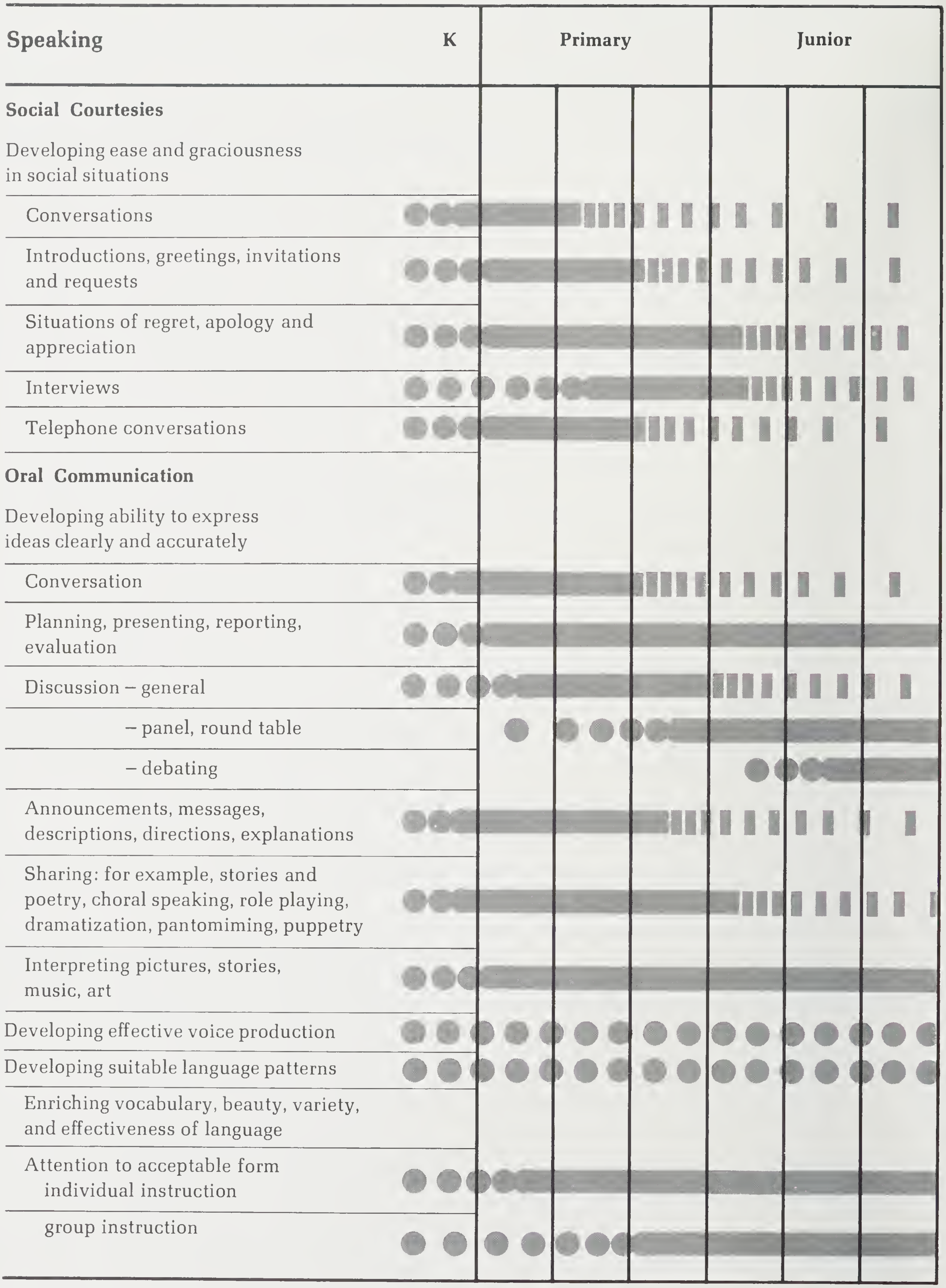
In order to present a systematic description of language development, charts have been organized to describe the four facets of the program.

The following is a key to the interpretation of the charts:

. . .	indicates informal and incidental kinds of experiences for the child;
———	indicates class activities planned and directed by the teacher so that the child will discover and have experience with the learning indicated;
— — —	indicates that the learning is maintained, extended, and enriched.

The pattern of development indicated on the charts is meant to be used as a guide. In general, it attempts to represent current opinion about the progress of "average" children. It is not intended to delineate specific limits, because of the differences among children both within a class, and from class to class.

Listening	K	Primary			Junior		
Attentive Listening Developing ability to listen attentively in audience situations; for example, conversation, discussion, programs	● ● ●	▬	▬	▬	▬	▬	▬
Informational Listening Developing ability to listen to gain information, and follow directions	● ● ●	▬	▬	▬	╍	╍	╍
Critical Listening Developing ability to listen for specific purposes; for example, main idea, details, sequence, comparisons, relationships, implications, conclusions, outcomes, evaluation	● ● ●	▬	▬	▬	▬	▬	▬
Appreciative Listening Developing awareness, sensitivity and imagination through conversation, stories, poems, nonverbal sounds	● ● ●	▬	▬	▬	▬	▬	▬
Recognizing humour and wit in conversation, stories, poems	● ●	● ●	● ●	● ●	● ●	● ●	● ●
Deriving satisfaction and enjoyment from conversation, stories, poems, music	● ●	● ●	● ●	● ●	● ●	● ●	● ●



Speaking	K	Primary	Junior
Social Courtesies			
▪ Developing ease and graciousness in social situations			
Conversations			
Introductions, greetings, invitations and requests			
Situations of regret, apology and appreciation			
Interviews			
Telephone conversations			
Oral Communication			
▪ Developing ability to express ideas clearly and accurately			
Conversation			
Planning, presenting, reporting, evaluation			
Discussion – general			
– panel, round table			
– debating			
Announcements, messages, descriptions, directions, explanations			
Sharing: for example, stories and poetry, choral speaking, role playing, dramatization, pantomiming, puppetry			
Interpreting pictures, stories, music, art			
▪ Developing effective voice production			
▪ Developing suitable language patterns			
Enriching vocabulary, beauty, variety, and effectiveness of language			
Attention to acceptable form individual instruction			
group instruction			

Reading

Basic Skills

- Developing ability to recognize words and meanings

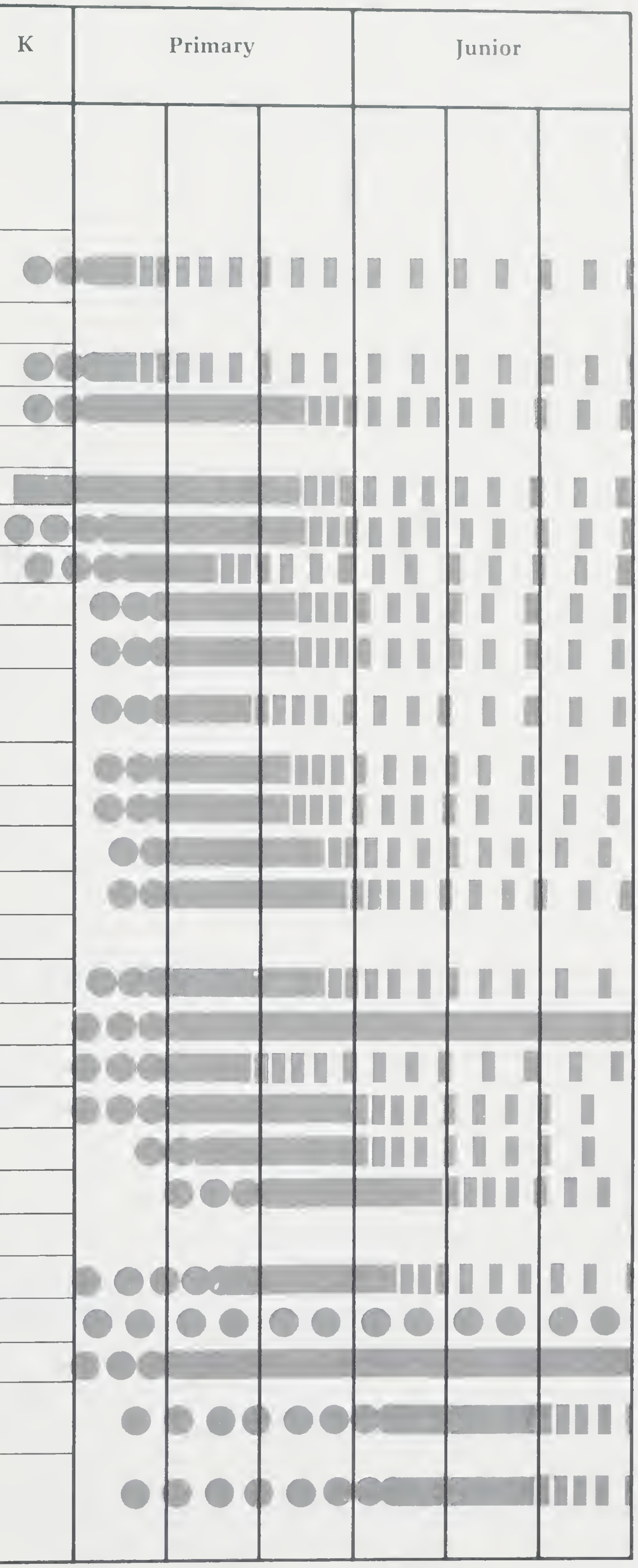
Sight Vocabulary
  word form

Context Clues
  picture
  meaning

Phonetic Analysis
  auditory discrimination
  visual discrimination
  consonants
  consonant digraphs
  consonant blends
  substitution of initial and final consonants
    consonant digraphs
    consonant blends
  vowel sounds
  phonetic principles

Structural Analysis
  compound words
  root words
  inflectional endings
  contractions
  prefixes, suffixes
  syllables and rules of syllabication

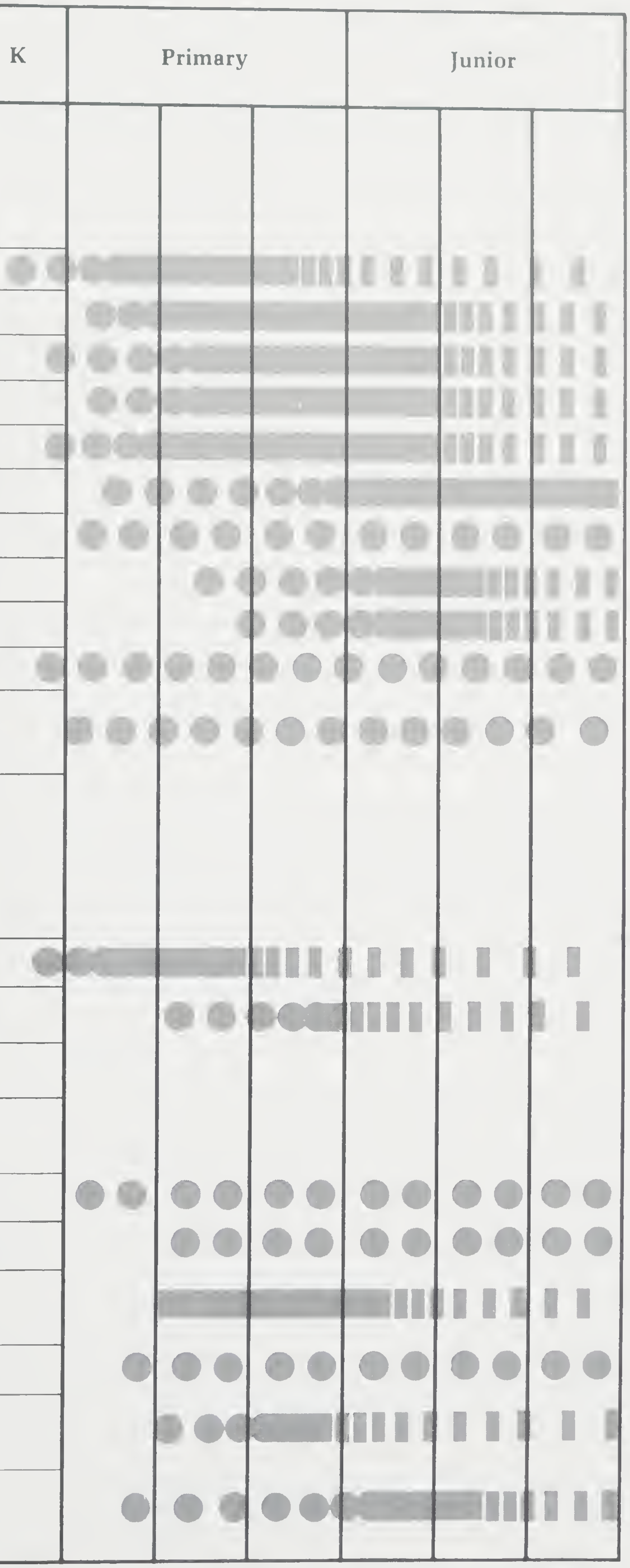
Dictionary Skills
  alphabetical sequence
  personal dictionaries, word lists
  root words
  study of dictionary as a source of reference
  use of dictionary for information in all areas of study



(continued on page 10)

Reading	K	Primary			Junior		
▪ Developing ability to understand and interpret Main idea Detail Sequence Comparisons Inferences Judgments Conclusions Outcomes Evaluations	●	▬	▬	▬	▬ ╍	╍	╍
▪ Developing ability to read effectively in audience situations							
Personal stories, reports, plans		▬	▬	▬	╍	╍	╍
Stories		▬	▬	▬	╍	╍	╍
Poetry		●	●	●	●	●	●
Announcements, news items		▬	▬	▬	╍	╍	╍
Choral reading		●	▬	▬	╍	╍	╍
Role playing, dramatizations, puppetry		●	▬	▬	╍	╍	╍
Reading correlated with all subject areas		▬	▬	▬	╍	╍	╍
▪ Developing ability in related skills							
Using table of contents and index of books		●	●	●	●	●	●
Skimming			●	●	●	●	●
Using globes, maps, graphs, charts		●	●	●	●	●	●
Using other reference materials		●	●	●	●	●	●
Appreciation of Literature							
▪ Inculcating an interest in and a desire for reading as a source of satisfaction, enjoyment, and growth							
Teacher reading to pupils	▬	▬	▬	▬	▬	▬	▬
Teacher guiding independent reading of pupils		●	▬	▬	▬	▬	▬
▪ Exploring, appreciating, and enjoying good literature in all subject areas		●	● ▬	▬	▬	▬	▬
▪ Encouraging voluntary memorization of favourite selections	●	●	●	●	●	●	●

Writing



Self Expression

- Developing ability for self expression and evaluation

Labels, signs, lists, announcements

Relating personal and group experiences

Outlines, reports, records

Diaries, newspapers

Letters

Stories

Rhyming and verse making

Play writing

Biographies, autobiographies

- Encouraging vocabulary enrichment
- Developing sensitivity to effectiveness of form

Fundamental Skills

Handwriting

- Developing legibility with reasonable speed

Print script

Cursive writing

Spelling

- Developing ability to spell correctly words needed for written communication

Word study in all subject areas

Mastery of most frequently used words

Developing effective techniques for learning to spell

Keeping personal spelling lists

Keeping personal spelling records and graphs

Using the dictionary as an aid for correct spelling

(continued on page 12)

Writing	**K**	**Primary**			**Junior**		
Usage							
- Developing suitable structure, punctuation, and usage as aids to effective communication							
Sentences		● ● ▬	▬	▬	▬	▬	▬
Paragraphs		●	● ● ● ▬	▬	▬	▬	▬
Words							
vocabulary enrichment		● ●	● ●	● ●	● ●	● ●	● ●
dictionary references		● ●	● ●	● ●	● ▬	▬	▬
functions of words – as used in children's writing		●	● ●	● ● ▬	▬	▬	▬

B. SUGGESTIONS

LISTENING

1 The general atmosphere and organization of the classroom contribute to the development of attentive listening. The teacher should:
- —exemplify good listening habits by being attentive to the words of the children and by showing thoughtful consideration of their statements;
- —remember that too much talking by the teacher tires the children and causes a lack of concentration in the class;
- —give instructions clearly and simply;
- —make statements once only, so that children learn to listen attentively;
- —remember, when speaking to children, that their listening vocabulary is usually more extensive than their speaking vocabulary, and so he should not "talk down" to them;
- —encourage children to give the same kind of attention to one another as they are expected to give to the teacher;
- —realize that there are more opportunities for children to listen to one another in small groups than in the large class group;
- —help children to develop standards for effective listening;
- —identify children who do not hear normally and adjust to their hearing difficulties;
- —remember that a feeling of empathy between each child and his teacher is the strongest factor in the development of good listening.

2 The first step in teaching phonics consists of training in auditory discrimination – that is, hearing likenesses and differences in sounds. A child must be able to hear a sound accurately before he can produce this sound in his own speech. He must be able to produce this sound in his own speech before he can make use of it later in associating sound with the symbol that represents it. It is vital, therefore, that time be devoted to auditory discrimination; for example:
- —classroom sounds, nonverbal sounds;
- —sounds – near or far, high or low, loud or soft;
- —animal sounds;
- —music – piano, records, instruments;
- —recognition of rhyming words;
- —recognition of words with similar beginning sounds;
- —recognition of initial, medial, or final position of sounds.

3 By the time a pupil reaches the Junior Division the basic listening skills have been introduced and developed. The refining, extending, and enriching of skills is fully as important as their introduction.

4 It should be noted that a review is not only a looking back over but can be a second view from a new, fresh, and interesting point of view.

SPEAKING

1 In all oral communication the teacher's speech should be exemplary: a pleasing and expressive voice, clear enunciation, correct pronunciation, interesting and effective language.

2 Each classroom should have an environment which provides opportunities for a variety of experiences for each child such as library, science, excursions, sharing time, picture-making, construction. These will build up his stock of ideas or concepts and give him something to talk about to other children and to his teacher. In this way the number of words that he can use with understanding will be increased, and he will become more skilled in expressing his feelings and ideas in words. These skills lay a foundation for success in reading because a child cannot easily learn to read words that describe experiences he has not known.

3 It should be remembered that the expression of an idea is of prime importance. Children should be encouraged in every way to express ideas and to be made to feel that their contribution is appreciated.

4 Children are interested in words. If attention is drawn to interesting and effective words and figures of speech in day-to-day happenings, conversations, discussion of pictures, stories, and poems, children will attempt to incorporate these words and figures into their own speech.

5 Children can be helped to develop standards for effective speaking.

6 Suggestions for improving oral language can be given in an informal and inconspicuous way without sacrificing the continuity of thought or the security and confidence of the child. Major speech difficulties should be referred to the speech specialist.

7 It is not necessary to insist that pupils should always speak in complete sentences. In oral expression, a word, a phrase or a sentence can be an appropriate response.

8 From the beginning the correct terminology should be used; for example, a sentence should be called a sentence.

9 "Sharing Experiences" provides opportunities for thoughtful listening, clear thinking, and effective speaking.
—Children need to be made aware that listening and responding are important aspects of the group sharing time.
—Attention should be given to the seating arrangements of the classroom to ensure opportunities for good discussion. Seating children informally and intimately around the teacher increases the frequency and improves the quality of participation.
—An attempt should be made to vary the organization of "Sharing Experiences"; for example, a pupil chairman, a panel, one group in charge, radio broadcast, television broadcast.
—By means of comments and questions, the teacher can help children see how their various experiences fit into the world about them. He has the opportunity also of helping them become sensitive to the problems of others,
—The teacher should be aware that each child can be helped to organize ideas and to present them effectively, so that listeners will wish to hear what he has to say.

10 The importance of dramatic play and dramatization cannot be over-emphasized. In addition to developing the effective control and use of language, gesture, and movement they also provide an opportunity for children to clarify their understanding of relationships, and an appropriate outlet for the release of feelings and tensions.
—The emphasis should be on spontaneity.
—Elaborate properties are unnecessary.
—There should be a variety of experiences to encourage growth in expression suited for individual needs and interests of children; for example:

dramatic play within the learning centres during the development of interests, following a story or poem;
tableau, pantomime, presentation with dialogue;
puppetry;
presentation of plays, improvisations, and dramatizations of stories.

READING

THE TEACHING OF READING

Educators generally agree that there are many effective ways to teach reading. Research projects are being carried out to study and compare major approaches to the teaching of reading. These involve a comparison of Basal Reader, Initial Teaching Alphabet, Language Experience, Linguistics, and Phonics.

Teachers have always combined the language experience approach with other systems that they were using to teach beginning reading. Thus meaning, thinking, and interest were emphasized in a carefully planned sequential program of reading skills.

In current reading programs much attention is given to the combination of basal readers and the language experience approach. In some schools, teachers are using the language experience aproach extensively. This brings together the four language skills of listening, speaking, reading, and writing, for purposeful communication based on children's experiences, interests, and thinking. Children, therefore, are motivated for learning to read because their reading grows out of their experiences.

THE CHILD'S "READINESS"

1 Although the expression "readiness" is used frequently in the discussion of Kindergarten and Grade 1 programs, its meaning is not always interpreted in the same way. In a broad sense readiness is when a child is able to experience success in a certain activity.
Readiness has several important implications.
a) It is concerned with the physical, social, emotional, and mental growth of each child.
b) It is related to the quality of his experiential background.
c) Each child is always ready to learn something.
d) Because of the nature of learning, it is the child who determines when he can encounter success-

fully a new experience. The teacher provides the media and arranges the environment for the learning to take place.

e) The school program should not become highly formalized and devoted to "reading readiness", because by its nature readiness is broad in scope and comprehensive in development.

2 Some children read before they come to Kindergarten. Most children have contacts and experiences with words in Kindergarten. Some children need to continue to have this same type of experience in Grade 1, before they are able to have success with a more organized program.

Some teachers use the term "reading readiness" to cover all reading experiences before the introduction of the basal readers. Because of these interpretations, many teachers claim that "Initial Reading" or "Beginning Reading" is the most appropriate expression to cover all experiences the child has with reading (a) before he comes to school, (b) in Kindergarten, and (c) in Grade 1 before he is introduced to instruction with the basal readers.

3 Most teachers feel that the skills which are usually associated with the "initial reading" are developed as an integral part of the daily program.

a) The study of pictures helps children to develop skills in visual discrimination.
b) The use of manipulative materials such as coloured sticks, blocks, and puzzles helps children to develop skill in visual discrimination. This enables them to see likenesses and differences and promotes eye and hand coordination.
c) Listening carefully and thoughtfully in discussions and during story and poetry time helps children to develop the habit of listening for meaning.
d) Many listening activities help children to develop skill in auditory discrimination to enable them to hear likenesses and differences among sounds.
e) An environment rich in possibilities for varied experiences contributes to each child's stock of ideas, his meaningful vocabulary, his ability and desire to express himself. These will enable him to understand what an author has written in the readers and other books.
f) Stories and verses of literary merit kindle and extend children's interests in books and reading, enlarge their vocabulary, and give valuable training in listening and in concentration.
g) Children become acquainted with left-to-right progression when the teacher draws attention to it as words and sentences are written.
h) Situations which involve problem-solving and decision-making lead children to think – an ability required in all reading experiences.

4 In planning the reading program the Grade 1 teacher notes the many individual differences in the children of his class and observes carefully each child's desire to learn to read by his interest in words, stories, and books. While some children will show much interest in printed symbols and use them purposely others will have no interest in words. Instead, these children need many sensory experiences and opportunities to talk about them. Their interest in printed symbols will develop at a much later time. It is the responsibility of the teacher to observe the stages of development of each child and to provide the right experiences at the right time so that all develop favourable attitudes towards reading.

5 An appropriate program for some Grade 1 children might include experiences and activities suggested in the Kindergarten Program.

INITIAL READING EXPERIENCES

1 A child in Kindergarten or in Grade 1 might express his ideas through various media such as paint, crayons, clay, blocks, box sculpture, dramatic play. He is encouraged to talk about what he has created. The teacher writes the exact words and he "reads" back what was written. In this way, he learns that a record of his experiences can be expressed in either oral or written symbols.

2 Once a child grasps the relationship between the spoken and the written word, reading and writing should develop simultaneously and opportunities for both should be given. At first he may show an interest in writing by tracing the words which he dictated to the teacher or by writing them below the teacher's words. Later he may attempt to write stories independently, copying words from various available sources. These stories, which usually accompany a child's pictures, present a record of his day-to-day experiences and interests. In addition they give the child the valuable experience of associating meaning with written symbols and of recognizing himself as an author.

3 There can be many opportunities for pupils to create and read interesting and purposeful materials which aid in developing and extending language skills. Use may be made of:

–pupils' names;
–signs, labels, directions, notices, announcements, explanations, reminders;
–news records, diary records, reports, outlines;
–plans for a trip, for a visitor, for a classroom activity;
–calendars: daily, weather, birthdays;
–charts: monitors, work, materials,
 classification, reading skills,
 lists of words for specific uses,
 charts related to measurements,
 quantity, weight, size;

- individual booklets containing a child's pictures and stories related to an experience, an interest, an interesting storybook, a musical record;
- class booklets related to a common theme, prepared cooperatively or composed of individual contributions.

These language experiences arise out of activities in the various subject areas; for example, Social Studies, Science, Art, Health, Mathematics, Music.

DEVELOPING INDEPENDENCE

1 In order to become an efficient reader, a child must develop independence in identifying unfamiliar words and in associating meaning with them. In the initial period he begins to use word attack skills such as, word form clues, context clues, phonetic analysis, and structural analysis. He becomes more proficient in the use of these as he progresses through successive levels of the reading program.

2 There are many different ways in which children work out the pronunciation of words. One skill may be effective for one word and a different skill for another or it may take a combination of two or more skills to work out a certain pronunciation. Sometimes one skill will be needed to check another. It is essential, therefore, that children be taught all the skills and how to use them in conjunction with each other.

3 During the early stages of beginning reading, most children learn to recognize some words by sight. This vocabulary usually consists of words in language charts based on the children's experiences and words in other initial materials. The child accomplishes his recognition of a sight word through the form and letters of the word, the sound of the word, and his interest in it.

Some words have to be seen, heard, and used many times before they become the child's own. Some new words should be kept before the children: in phrases or sentences on the chalkboard and charts, in word lists, on picture-word cards. Such charts and other points of reference are a definite aid to recall.

After a child acquires the ability to use several word attack skills he gains independence in word recognition. The formal teaching of sight words is discontinued but through constant experience in reading, each child should increase his own basic sight vocabulary.

4 Each basal reading series has a carefully planned program for the development of word attack skills and comprehension skills. The manuals or guide-books list the scope and sequence for each level and suggest methods of teaching the skills so that understanding is stressed. Meaningful practice material is provided.

5 The range of individual differences in reading ability tends to increase with reading instruction. Children in a group at the end of Grade 4 will show greater individual differences than they did at the end of Grade 1. Consequently the reading program in the Junior Division should be based on a continuing diagnosis of reading ability. This would involve a survey and an analysis of children's reading competencies. The instruction could then be at the individual child's needs.

READING IN THE CONTENT FIELDS

1 Reading is an important technique of learning and makes a contribution to all subject areas. It should be used in close relationship with other learning techniques; for example, planning and recording field trips, viewing motion pictures and television programs, listening to radio and recordings, observing and carrying out experiments, taking part in discussions, giving reports, examining graphs, charts, maps.

2 Children require guidance for reading in the content field. They ought to know how to skim or read for detail, get the main idea, obtain an overview of informational material, or use the specific techniques required for reading mathematical materials with precision.

3 Children should be given guidance in studying illustrations, maps, and diagrams.

4 Children should be encouraged to keep records of reading; for example, bibliographies, card indexes, filing.

SUPPLEMENTARY READING

1 All children need help and guidance in locating interesting books which they are able to read.

2 Each classroom should have a book corner with its own book collection or with books borrowed from the central library if there is one in the school.

- In order to provide suitable and stimulating material for each level of reading ability, the corner might include:
  nursery rhymes,
  alphabet books, picture-word books,
  picture-sentence books, easy-to-read books,
  pupil-prepared books;
  a wide range and variety of books:
  storybooks, myths; legends; folklore,
  science stories, fiction, biography, autobiography,
  poetry, plays, reference books.
- Children may take turns in assuming responsibility for the display of books.

Note: For suitable titles see Circular P. and J. 4, "Basic Book List for Primary and Junior Divisions."

3 Children should not be required to give reports of books read. They can be encouraged to share voluntarily a good story, part of a book, or a picture in a book. This may be done within a small group or with several groups operating simultaneously. Many children like to make a picture or a booklet about a favourite story. Book clubs stimulate interest. Children can be encouraged to exchange personal books.

APPRECIATION OF LITERATURE

1 Teachers have the responsibility and privilege of introducing children to the world of books and of helping children to select and enjoy the treasures of literature.

2 Teachers should read and present to the children a variety of stories and books of literary merit; for example, stories and books for entertainment, information, relaxation, guidance identification, enrichment of language, creative activities, stimulation of imagination and exploration of life and living.

3 Good poetry should be read to the children regularly so that they expect and enjoy it. There are many ways to help children develop an interest in poetry; for example, by encouraging them to choose favourite poems, by having them repeat interesting parts with the teacher, by correlating poetry with other interests.

4 As the teacher shares books with children she can lead them to appreciate format, illustrations, author, and illustrator.

WRITING

CREATIVE WRITING

In the Primary Division

1 In view of children's wide interests, the interrelationship between reading and writing, and the ease of manuscript writing, there should be opportunities for creative writing experiences as early as possible in each child's school program.

2 A creative writing program encourages each child to:
—recognize the worth of himself and his ideas;
—select and write about his own interests and ideas;
—write frequently and to share his stories with others:
—set up his own criteria to be used as a basis for evaluation.

These purposes can be accomplished only when children are given many opportunities to express ideas in writing.

3 As an indication of some of the areas of the creative writing program, the following points might be considered:

a) Children select topics related to their experiences and interests, associated with events, and with appeal to their imagination; for example, community, family, school, and classroom situations; correlation with "subject areas"; seasons and special days; pictures; books and stories; pets and animals; hobbies; excursions; diaries.

b) Each child should know that someone will hear or read what he writes; for example, two children might read their stories to each other; each child might read in a small group; one child from each group might read his story to the class. Children's stories might be reproduced for class and school newspapers; for class booklets and individual booklets for the library centre; for puppet shows; for mock-radio and television programs; for real letters, invitations, thank-you notes, get-well notes.

c) Certain procedures help some children achieve more satisfying results.

—Children can be encouraged to discuss their interests and ideas. Pictures and concrete materials might be used to create interest. Starting aids might be provided for children who wish to use them or who need the assistance. Beginning sentence, key words, and closing sentence are helpful.

—In the beginning there might be some cooperative sentences and paragraphs composed by children and dictated to the teacher. There are individual efforts, also, when a child tells the teacher what to write concerning his picture. He might try to copy the words written by the teacher. Children should be urged to begin on their own as soon as possible. They require considerable assistance and encouragement from the teacher in getting started. Unlined paper is recommended for some children because lines tend to hamper their flow of expression.

—A specific language skill might occasionally be emphasized for a writing activity; for example, writing complete sentences; using correct punctuation for each sentence; keeping sentences in order; writing a good beginning sentence, an effective closing sentence; using interesting and effective words; choosing good titles.

—Children should be encouraged to become resourceful in spelling unfamiliar words; for example, locate words in basal readers, story books, picture dictionaries, charts, chalkboard, personal dictionaries and spelling lists; use phonics and their knowledge of word structure to write words or parts of words; ask teacher to write difficult words on scratch pad.

—Basic steps for writing activities can be followed — such as think and write, read and

improve, read to someone or copy for a purpose.
  - Children should expect to recopy their work correctly only for a special purpose such as for school or class newspaper.

4 The teacher has a vital role in evaluating a child's written expression and in helping him evaluate his own efforts.
- Each child, whatever his maturity and ability, should feel a measure of achievement from each language experience and therefore look forward to the next.
- A child's work cannot be judged by adult standards. Individual evaluations must take into account the child's ability and the effort he has made.
- The teacher should be tolerant about spelling, punctuation, and usage – provided children understand that they will be expected to improve these as they learn them through their daily work.
- Positive merits should be recognized, such as, ideas, choice of words, variety of sentences, expression, punctuation, capitalization.
- The teacher should diagnose particular weaknesses and give help to individual children, to a small group, or when necessary, to the whole class. It is important to remember that children who do not express themselves well in writing need practice, patience, and help in speaking and listening. Only as the other language aspects improve, will writing improve.
- Children can be encouraged to learn their own editing techniques and to establish their own criteria to be used as a basis for evaluation, revising these as learning takes place.

In the Junior Division

While prime concern must be given to the creative process, the teacher must establish in the classroom a climate that enables children to seek the guidance necessary to express their ideas in writing that is clear, accurate, and in a form that is suitable for their stage of development. As in the case of oral expression, instruction in written expression must be largely individual and specific.

Suggestions for Encouraging Creative Writing

a) Conversation about interesting things leading to cooperative stories, reports, letters, dramatizations.
b) Reading aloud good prose and poetry – give literary background, provide models, develop ability to judge standards.
c) Encouraging children to look into their own wealth of experience for ideas.
d) Trips in search of sights, sounds and smells.
e) Use of pictures and concrete material.
f) Cooperative writing of poetry.
g) Made-to-order story (composed from a list of words and phrases for a beginning paragraph).
h) Unfinished story.

Suggestions for Creative Writing
in the Content Fields

Much creative writing can be done in correlation with other subjects.

Science

- Writing reports
- Listing materials
- Writing letters
- Keeping a bibliography
- Recording experiments and events
- Keeping scrapbooks
- Writing to explain events to someone who is interested but unfamiliar with science

Social Studies

- Compose person-to-person letters
- Prepare person-to-group reports: examples from newspapers, class announcements
- Prepare summaries and point-form outlines: examples are tables of contents, agenda, sequences of events in a series or development
- Compose agenda, invitations to meetings, minutes, resolutions
- Write or arrange points in columnar or tabular form, for example, comparisons and contrasts
- Translate into words the "meaning" of a cartoon, drawing or photograph
- Introduce with examples the meanings of "particular" and "general", or statement and illustration, or argument and evidence, or main idea and supporting detail

Art and Music

- Write stories, make booklets about famous artists after research and study; for example, a booklet "Three Geniuses: El Greco, Mozart, Michelangelo."

FUNDAMENTAL SKILLS

Handwriting

1 It is recommended that reading and writing develop simultaneously because of the interrelationships between the two processes and because each supports and strengthens the other. It is important, therefore, that teachers adopt methods by which children might acquire the handwriting skills necessary to keep pace with their progress in learning to read.

2 Many children use pencils and crayons before they come to school. They make pictures, attempt to "scribble" a letter to someone, and try to write their own names. Their purpose for writing is to communicate – not to learn the art of handwriting. It is to

be expected that children will bring to Kindergarten or to Grade 1 this interest in writing and also the concept that writing helps them say something.

3 Because of individual differences there is a wide range in the writing experiences of children entering Grade 1.
- –Whether or not they have attended Kindergarten many children are able to write at least one of their names. Some children are not interested in doing any additional writing while others trace the teacher's writing or try to copy what the teacher writes. Occasionally some write independently, copying words from various available sources.
- –Children write capital letters more frequently than lower case because they are easier to make and because children are more familiar with them through signs and advertisements.
- –Much of the writing is done on unlined paper with large pencils, crayons, paint brushes, or felt pens.

4 The following procedures help children gain a feeling of competence in writing to keep pace with their ability in learning to read.
- –There is an introductory lesson period to practise the basic shapes of circles and lines.
- –Several letters of similar formation, such as o, a, c, e, are introduced at the same time, with children practising them at the chalkboard and on unlined paper. When this is done, it requires a very short period of time for children to attempt to write all the letters of the alphabet.
- –Later, if necessary, the teacher can help children improve their writing by working with individual letters.
- –Children are encouraged to write words as early as possible to enable them to use writing purposefully.
- –The use of unlined paper in the beginning removes some of the initial difficulties for many children.
- –Correct formations of the letters should be in evidence for children's reference.
- –The emphasis throughout is to encourage each child to use his writing to express his thoughts and feelings for himself and for others to read.

5 Many school systems have developed a writing program for their schools. For other schools the following points might be considered:
- –Manuscript writing is recommended for use in Grades 1 and 2.
- –Some teachers recommend writing manuscript letters without lifting the pencil, if possible.
- –Manuscript letters should be made with strokes that match the left to right direction of the cursive writing; for example, the circular part of the letter "d" should be made before the vertical line.
- –If the height of the manuscript letters is reduced in Grade 2 the lined paper could have guide lines for the lower case letters.
- –Slanted or vertical cursive writing is introduced in Grade 3 or in the latter part of Grade 2. Many teachers recommend the same type of paper for cursive writing as was used for manuscript writing.

6 By the time children reach the Junior Division they have developed legibility and reasonable speed in their handwriting. Individual guidance may be necessary but there is little place for class instruction in formal handwriting.

Spelling

1 Children discover readily that their own words and sentences are more interesting, meaningful, and challenging than drill on meaningless mechanics and details. When children begin to sense the purposes of writing, they see the reasons for learning to spell words and for producing legible manuscript writing.

2 Not all children learn to spell in the same way. Whatever method is most effective for a child, he makes best progress in learning to spell useful and meaningful words.

3 In Grade 1 there is much incidental learning of spelling.
- –Children can be helped to become aware of words and to look at them closely.
- –Children can be encouraged to become resourceful in locating words which they want to use; for example, in story books, picture dictionaries, charts, pupil-prepared books, chalkboard, signs, directions, word lists, basal readers.
- –Children can use phonics and their knowledge of word structure.

4 In Grades 2 and 3 there are many activities which involve spelling and there are numerous opportunities for the teacher to draw attention to the sequence of letters and the structure of words.
- –As in Grade 1, children should be encouraged to become resourceful in locating words and to use phonics and word structure.
- –In their dictionaries children might write in alphabetical lists the words used most frequently and other words which arouse their interest.
- –If spelling lists are used the words should be related to the pupils' writing needs and should be learned in meaningful contexts not in isolation.

5 In the Junior Division the emphasis in all written work is on creative expression and communication. Children must realize that correct spelling is part of the communication process. The teaching of spelling done in context is preferable to teaching spelling as an end in itself.

CONTENTS

INTRODUCTION 3

I PRINCIPLES AND TOPICS 4

Diagram: The Development of Mathematical Concepts in Young Children 5
Mathematics as a Medium of Communication 6
Diagram: Number and Operations 7
Diagram: Measurements and Relationships 8
Diagram: Shapes and Space 9

II SUGGESTIONS 10

Adapting to Change 11
References for Teachers 12

INTERIM REVISION/MATHEMATICS
GRADES 1 TO 6

INTRODUCTION

There are two main divisions in this course. The first section, Principles and Topics, consists of a statement of aims and three lists of concepts. The second section, entitled Suggestions, outlines the kinds of attitudes, methods and materials necessary for achieving the aims of the course.

Each of the three lists of topics in the first section contains an outline roughly illustrating sequence of difficulty, and each commences with topics suitable for the first year of the Primary Division. Teachers will realize the need to interweave topics from each of the three lists at times. The possibility of developing concepts from more than one of the lists, at the same time, is inherent in most activities of children. For example, when children work with water and various-sized containers, ideas about fractional number concepts, liquid measurement and conservation of volume may be developed.

No specific assignment of topics to grade levels is desirable. The placement of any topic at any particular age level of children is arbitrary. Recent research and experimentation show that the background of experience of each child, and the method by which a topic is approached, are more valid requisites of readiness than the assignment of a topic to a grade through tradition.

The following is an interpretation of the sequence of dots, solid lines and dashes after each topic in the three sections of the syllabus:

. . . . . informal and incidental experiences
_____ planned and directed activities
- - - - - learning refined, extended and enriched.

Any exactnesss in relating the above interpretation of the dots, lines and dashes to grade levels is to be avoided. The dots, lines and dashes are merely suggestive and are intended to allow for the wide variety of topic placement shown to be successful in several modern mathematics programs.

Sequential presentation of topics is only necessary in a broad sense, as is indicated in each of the three lists of topics. Children may work in groups at apparently unrelated tasks in mathematics, and still develop mastery of basic principles.

During the six years of the Primary and Junior Divisions, children should develop some mastery of the concepts indicated in this course. The ability and interest of each child will determine the degree of mastery, as has always been the case.

The Suggestions in the second section of the course are by no means comprehensive. A wealth of aids of many kinds is available or aids may be developed by teachers, by various committees and groups, or obtained from commercial sources. Handbooks, manuals and teachers' guides can aid teachers in planning learning experiences for children. The production of Curriculum Guides would be a valuable in-service activity for teachers.

I PRINCIPLES AND TOPICS GRADES 1 TO 6

AIMS

1 Since the previous course was prepared, research in learning by children and experimentation in the teaching of mathematics have led to the adoption of several new concepts in the elementary school curriculum. These may be summarized as follows:

a) Children should be introduced to mathematics rather than arithmetic which is just one aspect of the subject.

b) Mathematics may be regarded as a medium of communication (See page 4). The parallel between the development of the language of mathematics and the native language of the child has become widely recognized in current teaching practices in the Kindergarten and the Primary Division.

c) Mathematics in the early grades should be treated as an environmental study using an inductive approach and hence may merge into science, geography, art, crafts, etc. It should develop its concepts and its applications from real situations.

d) A variety of procedures in solving mathematical problems should be accepted. It is desirable that pupils devise their own methods of attack.

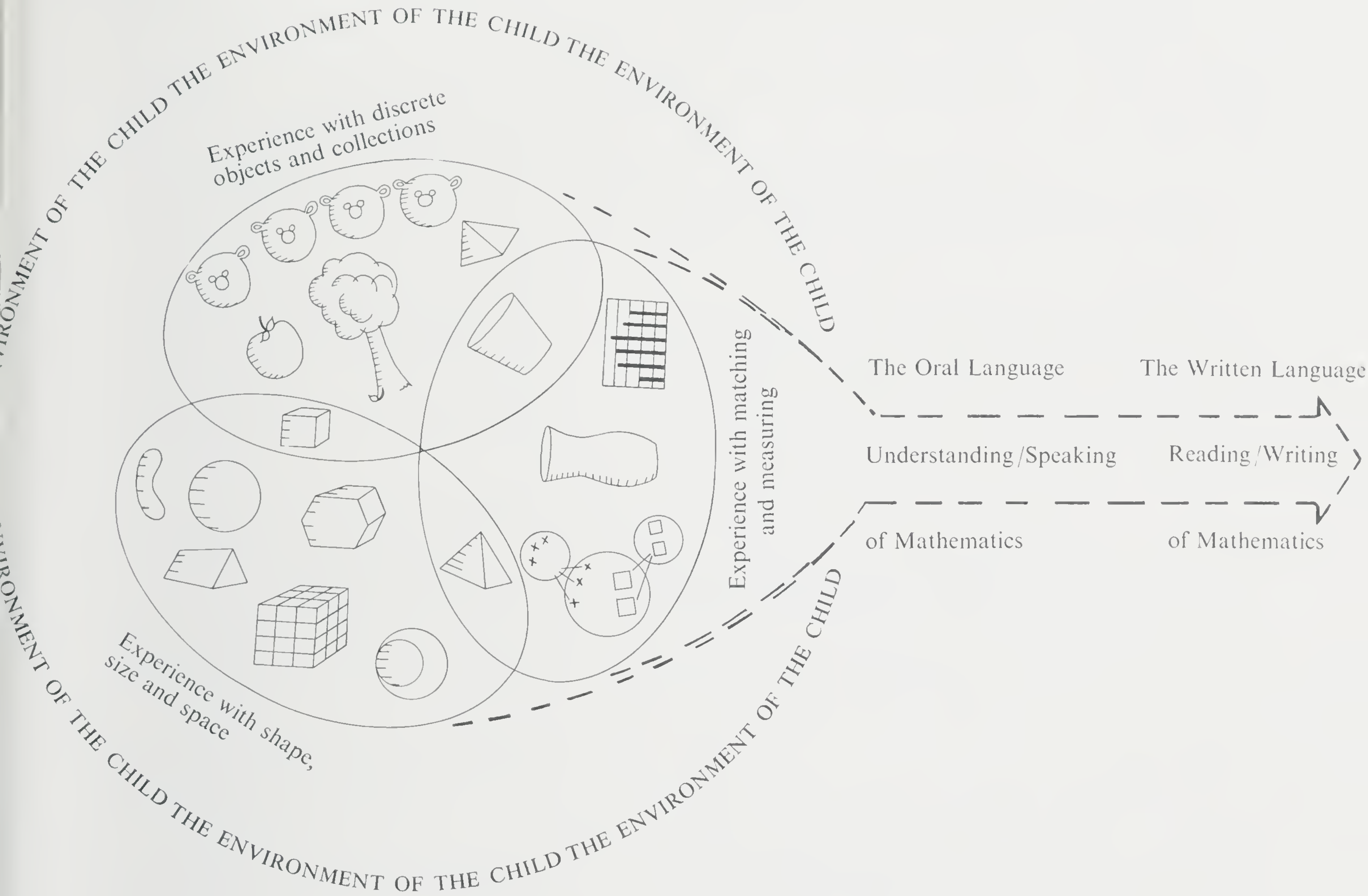
e) There will be wide variations in the times at which individual children arrive at a stage of mastery of even the fundamental facts of arithmetic.

f) Speed of recall is not a necessary concomitant of accuracy and accuracy is not a necessary consequence of repetitive "drill".

2 The development of mathematical concepts in young children is best achieved through an inductive process. Experiences with real objects and events in the child's environment should be the starting points for the growth of mathematical ideas. The abstracting of mathematical concepts from situations where children are at play or at work requires perceptive teaching. For example, when children start the "marble and skipping" season, the redistribution of marbles among the boys after each recess can provide data for bar graphs from which a variety of number facts and relationships may be deduced.

Teachers who know the basic mathematical concepts outlined in this course will be able to recognize the worthwhile discoveries made by children. Much discussion among children as they work together to solve practical problems should precede any reporting of mathematical ideas in symbolic form.

As in language, so in mathematics there should be recognition of a general sequence of development. The first stage is that of experience with concrete things and comprehension of the patterns and relationships thus discovered. As a child is involved in many experiences of many kinds, he will gradually gain sufficient security to describe orally the mathematics he knows. Undue urging of a child at this stage will create attitudes of insecurity and self-doubt which can become dislike of the subject. Time must be allowed for the child in the primary grades to have experiences and to comprehend for himself.


THE ENVIRONMENT OF THE CHILD THE ENVIRONMENT OF THE CHILD THE ENVIRONMENT OF THE CHILD THE ENVIRONMENT OF THE CHILD
Experience with discrete objects and collections
Experience with matching and measuring
Experience with shape, size and space
The Oral Language
Understanding/Speaking
of Mathematics
The Written Language
Reading/Writing
of Mathematics

MATHEMATICS AS A MEDIUM OF COMMUNICATION

Mathematics may be thought of as a special language which enables man to communicate ideas about quantity and shape and relationships. Its grammar is logic and its vocabulary is a wide variety of symbols.

In Grades 1 to 6 the basic teaching method should be inductive, with emphasis upon the discovery of principles by each child for himself. A wide variety of real experiences with real materials is necessary.

The three divisions of this course ought to be developed concurrently. A single experience of a child may serve to develop ideas which illustrate the close interrelationship of all three.

1 Number and Operations

A child needs an understanding of, and some facility in, the use of numbers for both practical and cultural purposes.

Arithmetic should be taught from the beginning in such a way as to emphasize the general properties of numbers. This algebraic approach aids the child as he begins to order and comprehend for himself our increasingly complex world.

Understanding of concepts is a prime requisite for all children. There is also a continuing need for a reasonable degree of computational skills for each child.

2 Measurement and Relationships

As the link between arithmetic and geometry, measurement is an important tool for the discovery of the mathematics that is in the environment. It has practical social uses such as telling time and handling money and, in an experience-centred curriculum, it is also necessary for the performance of experiments and other activities.

Through working with relationships of numbers and of quantities, a child can learn to think for himself. This is particularly evident in work with graphs. When he discovers pattern and order in his surroundings, a child will develop confidence in his own ability and a liking for the subject.

3 Shapes and Space

The physical environment of the child is composed of shapes and space. The relevance of geometrical ideas, as the child begins to order and comprehend this complex world for himself, is obvious.

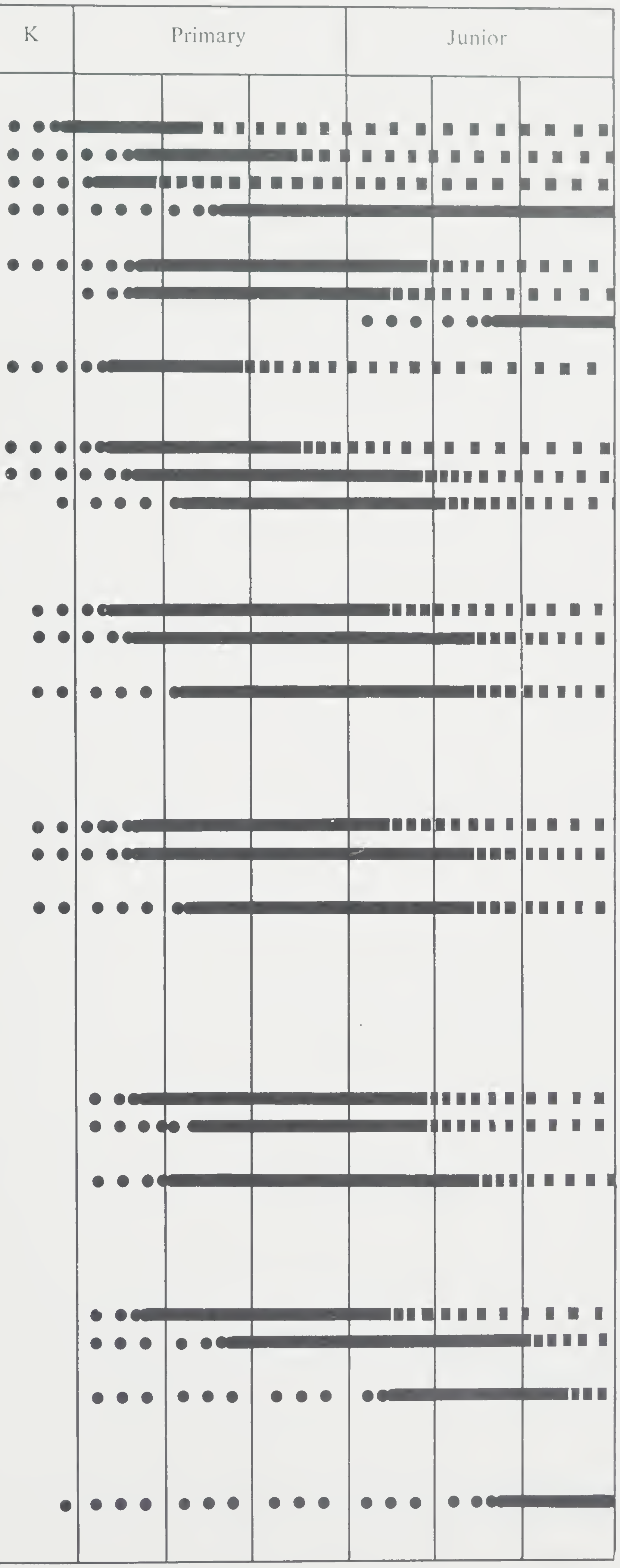
An intuitive approach is best, with children discovering properties of shapes, symmetry, similarity, then dimensions, in a progression of experiences. *No introduction of formal proofs in geometry is recommended.*

The possibility of inter-relationships among topics listed under Number and Operations and under Measurement and Relationships should be explored.

Research and feasibility studies are needed concerning the introduction of three- and two-dimensional geometrical ideas to children from the age of six to 12. Teachers are urged to be especially observant as children respond to experiences with three-dimensional materials, and to record and inform others of the kinds of discoveries made by pupils.

Similar studies would be valuable in the area of interrelationships of numbers and space; or indeed, in any area of the course.

NUMBER AND OPERATIONS



Developing the *cardinal* concept of number
- –comparison of groups: equal and unequal
- –counting
- –zero as a *cardinal* number
- –numeration: place value, expanded notation, regrouping
- –factors, primes and composites
- –Roman numerals
- –numbers to bases other than ten

Developing the *ordinal* concept of number

Developing the fractional number concepts
- –part or parts of a whole
- –part or parts of a group
- –decimal notation

Developing the concept of addition as a binary operation, *commutative* and *associative*
- –as computation with whole numbers
- –as computation with fractional numbers in common notation
- –as computation with fractional numbers in decimal notation

Developing the concept of subtraction as a binary operation, inverse of addition
- –as computation with whole numbers
- –as computation with fractional numbers in common notation
- –as computation with fractional numbers in decimal notation

Developing the concept of multiplication as a binary operation, repeated addition and the product of two factors, *commutative, associative* and later, *distributive*
- –as computation with whole numbers
- –as computation with fractional numbers in common notation
- –as computation with fractional numbers in decimal notation

Developing the concept of division as the inverse of multiplication
- –as computation with whole numbers
- –as computation with fractional numbers in common notation
- –as computation with fractional numbers in decimal notation

Developing the concept of integers
- –addition by vectors on a line, to introduce negatives

Additional topics for exploration and enrichment: Bookkeeping; Games and Patterns; History of Mathematics; Simple statistical presentation of data.

MEASUREMENT AND RELATIONSHIPS

Relationships of size, position, form, quantity
–graphical representation

Matching, one-to-one correspondence and many-to-one correspondence
–is equal to, is greater than, is less than
–elementary functions and patterns, as games and number puzzles

Linear measurement
–estimation, non-standard unit, then standard units

Measurement and relationships of area
–estimation, non-standard unit, then standard units

Measurement and relationships of volume
–estimation, non-standard unit, then standard units

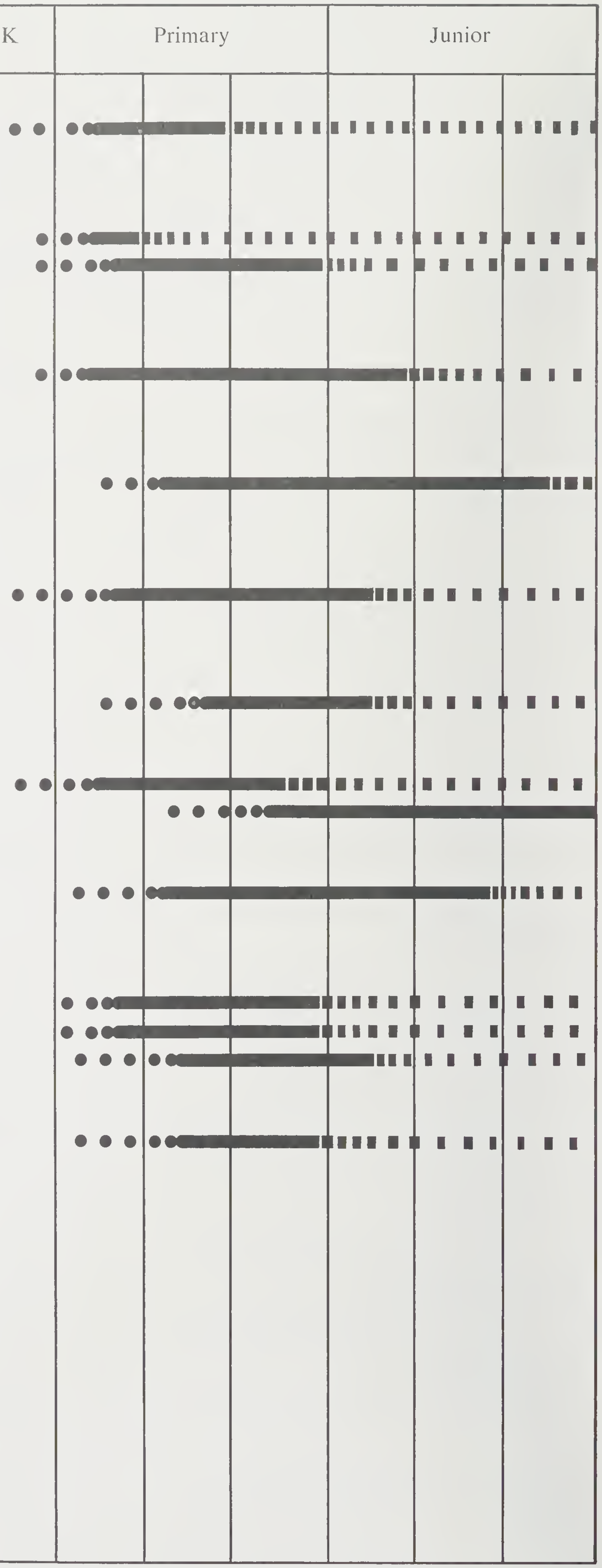
Measurement and relationships of time
–estimation, then standard units

Graphing of simple relationships
–pictographs, bar graphs
–circle graphs, line graphs

Ratio
–rate

Equations as symbolic representations of relationships
–with place-holders
–with missing operational signs
–with more than one operation

Properties of Equality and Inequality Relations
–solving by inspection, using place-holders



Additional topics for exploration and enrichment:
Co-ordinate systems; Metric system of measurement;
Scale Drawings; Vectors

SHAPES AND SPACE*	K	Primary			Junior		
Properties of shapes							
Solid Shapes							
–sphere, cylinder, cone, simple regular and semi-regular *polyhedra*	● ● ●	● ● ━	━	━	■ ■ ■	■ ■ ■	■ ■ ■
–faces, edges, vertices: number, relationships	● ● ●	● ● ━	━	━	■ ■ ■	■ ■ ■	■ ■ ■
Plane Shapes							
–simple regular *polygons,* and some irregular polygons, circle, ellipse		● ● ━	━	━	━ ■ ■	■ ■ ■	■ ■ ■
–edges, vertices: number, relationships		● ● ━	━	━	━ ■ ■	■ ■ ■	■ ■ ■
–interrelationships of plane figures: triangle/square, sector/circle, and symmetry, congruency, translations, rotations, reflections		● ● ●	━	━	━ ■ ■	■ ■ ■	■ ■ ■
Sets of Points							
–line segment, ray, angle, plane, *polygon,* circle (as sets in *Euclidean space*)				● ● ● ●	━	━	━
Space and Numbers							
Interrelationships: numerical illustrations of geometrical patterns and vice-versa	● ● ●	■ ■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■

Additional topics for exploration and enrichment: Curve stitching; Longitude and latitude: the sphere; Perspective drawing

---

*This section is an integral part of the course, but it should be treated experimentally, with different outcomes expected from different children and different classes.

II SUGGESTIONS

MATERIALS AND METHODS

Experiences in which the ideas of mathematics are abstracted from the environment of the child are best for the achieving of sound and lasting learning. The joy of discovery is the privilege of every child. The perceptive teacher makes a point of commending the 'moments of triumph' which result.

The learning of mathematics in elementary schools is a process of development *from the concrete* or real world, *to the semi-abstract,* and then *to the abstract* world of number, shape and relationships. Each teaching material must be used in its proper role. For example, such a sequence may be seen where the number of children bringing lunch to school each day for a week is recorded pictorially in a graph. Then a variety of number phrases is formulated from the relationships arrived at through class discussion.

1 Discovery techniques and problem-centred activities cannot be the only methods employed in classrooms, but a judicious balance of the presentation, the discussion, the reference-research and the experience-activity types of lessons should be maintained by the teacher.

2 It is anticipated that television will increasingly provide assistance to teachers of mathematics, as of most other subjects. Care must be exercised to ensure that a balanced variety of learning situations is maintained for the children but the potential of this medium of communication can scarcely be over-estimated.

3 When wide variations in the work of children in a classroom are expected, then the use of class sets of a single textbook is not desirable. Such a practice is inconsistent with the encouragement of experiences within the real environment of the child. A textbook should be employed as a reference and guide by a child, or as an application step – the culmination of some learning that has taken place elsewhere. Furthermore, textbooks should not be thought of as having a particular grade designation. If a child or a group of children are capable of progressing into the next book of a series, or a book at a higher level, this should be arranged. Similarly, children whose progress is slower than others should use books which provide for reasonable success on their part.

4 Small pamphlets and the laboratory or kit of spirally graded materials based on the idea of self-directed activity are increasingly useful materials. Programmed books are also useful in meeting the needs of individual pupils.

5 There is room, too, for commercially-prepared structural materials in mathematics in addition to films, filmstrips and other audio-visual media. Manipulative devices of many kinds should be provided to enable children to add tactile sensation to visual and auditory experiences.

6 A great many materials from the immediate environment of the children may be used in activities from which mathematics may be abstracted. For example, compartmented candy boxes can hold groups of marbles, geo-boards may be made with finishing nails and coloured rubber bands, a set of textbooks spread out on a table top may be used to illustrate measurement of area in arbitrary units.

7 The use of instruction cards, prepared by the teacher and used by pupils as guides for self-directed activities, is encouraged, as is the setting up of mathematical laboratories much like the library corner equipped with all manner of measuring devices and other apparatus.

Careful selection should be made of all materials. A basic criterion should be that a "tool" in the hand of each pupil is far more valuable than any didactic device employed by the teacher. It is more worthwhile to invest in a class set of concrete materials that enable each pupil to discover principles for himself, than to purchase demonstration equipment which is simply an adjunct to the lecture method.

Careful evaluation of textbooks should be a continuing responsibility of teachers. Discarding obsolete books is an important aspect of the selection of materials for use in the classroom.

Emphasis should be given to methods of recording results in a wide variety of ways – pictographs, bar graphs, charts and tables, Venn diagrams, experience chart stories, etc.

Opportunities for the abstracting of mathematical ideas from the activities of other subjects of the curriculum should not be lost. If mathematics appears to merge into science, geography, art and other subjects, so much the better.

STANDARDS OF ACHIEVEMENT

The syllabus in mathematics suggested in Section I is partially sequential – the development of skills in children from five to approximately twelve years of age must be somewhat orderly, and too, the structure of the subject governs the sequence of topics to a certain extent. But it should not be forgotten that experience is an undivided whole for children. No two children, or classes, or schools, should be required to follow the same route through this syllabus.

If the syllabus is thought of as only one possible natural progression in the thinking of a child, rather than a list of topics to be imposed on a class, then the learning which children do ought not to be subordinated to the examination.

1 *The teacher is in the best position to evaluate the progress of his own pupils.* Examinations, and the more preferable short-term (or single concept) test, should be based on the teaching that has taken place in the classroom, and should be differentiated for groups or individuals that have been following different routes within the class.

2 The understanding of a concept, or related cluster of concepts, might be evaluated whenever there is a need to estimate formally the progress of a pupil or a group of pupils. The development of tests, or better still, patterns for tests, might be done by committees of teachers.

3 In all formal testing of mathematics, care must be exercised to ensure that principles, rather than only procedural techniques, are examined. For example, knowing when to subtract is at least as important as knowing how to perform one of the standard algorithms for subtraction. Accuracy is, of course, a basic requisite.

4 The teacher who knows his pupils and who is competent in the subject is a better judge of pupil mastery than any test or examination. The comparing of a child's achievement on a test with an external or group standard is a questionable practice if used to make value judgments rather than diagnostic decisions.

5 Reporting to parents is best done in terms of the child's progress in mastery of the concepts of the course, rather than comparisons with his presumed ability or comparisons with a "class standard". Some reference to external standards – such as provincial or system-wide norms – may be desirable occasionally to inform parents of the relative rate of progress of a child.

ADAPTING TO CHANGE

Teachers have a professional responsibility to maintain competence in the changing subject matter of mathematics, as well as to work towards improved methodology. Some of the following suggestions may be of use in this regard.

1 A short but representative list of books and films is included at the end of this section, for use by interested teachers and in-service groups.

2 One or more staff members of a school could undertake to become a resource person in mathematics, by such means as:
  - membership in the Ontario Association of Teachers of Mathematics (Ontario Educational Association)
  - membership in the National Council of Teachers of Mathematics (U.S.A.)
  - subscription to the Ontario Mathematics Gazette
  - subscription to *The Arithmetic Teacher*
  - attendance at university and Department of Education courses in mathematics.

3 The vitality of mathematical ideas at every grade level in a school may be maintained by staff discussions, by mathematical clubs among the pupils, by co-operative teaching, and by the encouragement of experimentation.

4 It is highly desirable that local groups of teachers take responsibility for adaptation of this course. Some aspects of such adaptations might be:
  - Interweaving of the concepts of number, relationships and shapes into short units of work outlines.
  - Scheduling of work in accordance with local patterns of classroom organization (if such scheduling is deemed necessary): grades, units, or alternative schemes
  - Collating and distributing suggestions for the teaching of various topics of the course as an aid to teachers
  - Formulating short single-concept tests to help a teacher evaluate a child's progress in mastery of the individual concepts of the syllabus.

REFERENCES FOR TEACHERS

The Schools Council, Curriculum Bulletin No 1, *Mathematics in Primary Schools,* Her Majesty's Stationery Office, York House, Kingsway, London W.C. 2, England. Available in Canada through the British Information Services, 200 University Avenue, Toronto 1, Ontario.

Ontario Mathematics Commission, *Mathematics, Report of the Committee Considering the Mathematics Programme (K to 6),* Ontario Curriculum Institute, 102 Bloor Street West, Toronto 5, Ontario. (after September 1, 1966)

National Council of Teachers of Mathematics, *The Growth of Mathematical Ideas, K-12,* The Yearbook, National Council of Teachers of Mathematics, 1201 Sixteenth Street, N.W., Washington, 20036, D.C. U.S.A.

Educational Services Incorporated, *Goals for School Mathematics,* (Houghton Mifflin Company) Thomas Nelson & Sons (Canada) Ltd., 81 Curlew Drive, Don Mills, Ontario.

The Schools Council, *Maths Alive,* 16 mm. film available after September 1, 1966, from Audio-Visual Branch, Ontario Department of Education, 559 Jarvis Street, Toronto 5.

ONTARIO DEPARTMENT OF EDUCATION

CURRICULUM P1, J1

INTERIM REVISION
MUSIC

1967

INTERIM REVISION MUSIC

MUSIC

The musical culture of a country is not made by some musicians but by the whole people. Everybody has a hand in it, down to the very young.

Kodaly

Music has long been recognized as a vital part of education. In the school program the underlying aim is to enable children to enjoy good music in school and for the rest of their lives. In acquiring a love of music, students will become familiar with great works and, in the process, they will come to appreciate both the theory and the technique. They will develop discriminating taste that may ultimately help to produce a lively cultural life in the nation as a whole and enable them to make enjoyable and profitable use of their increased leisure time in a world of automation.

Many schools have specially trained music supervisors but the classroom program is largely carried on by the classroom teacher. In order to enable them to provide a rich program for the children, the Department of Education offers Summer Courses. The Ontario Music Educators' Association conducts workshops throughout the school year.

THE PROGRAM

Music, to become part of the child's way of life, should be part of the whole school day. Recorded music could be playing as children come into school as they arrive in the morning. During the day, the teacher will find that it fits into a number of study areas. Music is essential to many activities of the Physical Education Program. It can enhance the free expression in Art when used as background and may be used as an introduction or application to the study of a poem. In carrying out individual or group projects, the children may choose to express themselves through music.

The music program may include instrumental and vocal music but the vocal part will come first and should predominate. In Ontario the tonic sol-fa system is commonly used.

SINGING

Children will learn rote songs as often and as soon as possible. The emphasis in singing should be on the child's own enjoyment. With very young children, the first songs which are learned will deal with themes within the child's own experience—home, pets, nursery rhymes, or the guardians of safety and good health in his own community, such as policemen and doctors.

Subjects of this kind are particularly successful if they are set to tunes that are short, appealing and rhythmical. They should also fall within the child's voice range which is usually from middle E flat to the upper E flat.

As the children become ready for more complicated songs, the teacher may introduce folk songs from other lands, or rounds, two-and-three-part songs, two-part scales, two-part sequentials, and some minor keys.

The teacher will be the best judge of how many songs her students can learn in a given year, but at least 40 songs would be a realistic aim in the primary grades. More than 40 would be learned by the children in the Junior Division.

One problem all music teachers face is the child who sings out of tune. Generally speaking, a little extra attention in the early years will correct this fault. The teacher, herself, can generally tell just when the child is most receptive and will wait until he is anxious to improve his singing in order to join with his classmates more tunefully.

At first, the child will learn all songs by rote. Even then, however, the teacher should keep the staff in mind. She can even include some informal explanation of staff notation as the opportunity presents itself.

As soon as the child is ready, the teacher should introduce sight singing. He will learn to read music gradually, starting with written music for songs that he already knows. But the songs he learns will become more complicated as he progresses. The teacher will use the songs the children are learning to introduce the technicalities of notation, always explaining the terminology as an aid to musical enjoyment rather than as an end in itself. In this way, some children in the Junior Division may reach the point where they are accustomed to key signatures up to four sharps and four flats and be familiar with such terms as sharpened fourth and flattened seventh.

Some children may need special practice in scale tone groups and intervals but this can be an enjoyable experience if they consider such drill as an aid to learning a particularly pleasing song.

From the time he starts to read music, the child should constantly learn more and more about sight reading—which will, in the end, set him free in the land of music, as word skills do in literature. The teacher may present sight reading as a game or as the introduction of a new song. However she does it, she should make sure that practice is gradual, informal, regular, and always enjoyable.

Some teachers will also devise games or encourage children to devise games that develop intonation: matching notes, tests on loudness, pitch and quality, and tests of rhythm and memory.

Many teachers use the modulator. Electronic devices now are available as an improvement.

RHYTHMIC ACTIVITIES

Children are naturally fond of music to which they can respond with their whole beings. It is natural for a child to move his body in time to music and with a little encouragement he will translate this into a dance. The teacher might suggest that he pretend he is a bunny hopping, a fire engine speeding, or three bears taking a walk — depending on the music. He will soon be walking, marching, swaying, jumping, rocking, or gliding in time to the music. The child can learn note values through bodily movement more easily than through hours of verbal explanation.

LISTENING

Bodily movements as described in the last section lead naturally into the *Listening* part of the program, in which is developed a love for good music. The teacher can provide the child with a variety of recordings, both instrumental and vocal. She can intersperse such periods throughout the school day and integrate them with other subjects.

The teacher may also use recorded music to establish a mood that she wants to set—for instance, a child coming inside after a boisterous game on the playground may respond to the sound of soothing music playing in the classroom. After a period of concentration, he may find lively music a pleasant release.

As the child nears the end of the Junior Division, he should hear music that illustrates the variations of time, mood, colour, and rhythm. He does not need to use terms like legato, andante, or allegro, but he may well understand them. As children begin to identify form in music, they will, with encouragement, recognize the repetition of patterns and phrases in simple songs or instrumental selections.

They will also learn to recognize different musical instruments and their sounds. This can lead gradually to the instrumental part of the music course.

INSTRUMENTAL MUSIC

Although the music course in the Primary and Junior Divisions is largely vocal, many children are ready for the first steps in instrumental music. Individual children with musical ability or interest may be identified and provision made for their development. Children will find it natural to progress from listening to recorded instrumental selections, to learning about standard band instruments, and in a growing number of schools, to playing stringed instruments for themselves.

Small children must have orchestral instruments scaled down to their own size. This presents a problem in many schools but it is one that can be overcome. The development of string technique in the Primary Division is unlimited as far as the children are concerned. From a practical standpoint, however, progress can be limited by the number of instruments available and by the ability of the teacher.

SUGGESTED ACTIVITIES

- Simple rhythm bands offer the children musical experience and they also develop cooperation within a group.
- Action songs, singing games, and folk dances encourage a natural tendency to become part of the music.
- Music festivals may provide an opportunity for extending the school program. Students are usually enthusiastic participants and support the entries of their classmates. This enthusiasm may provide increased activity in the school music program.

NOTE: The recordings listed in the departmental circular *Music Appreciation Through Listening for Elementary Schools* are no longer available. New courses of study, based on the conclusions of the Committee on Aims and Objectives of Education, will include special attention to music appreciation.

ONTARIO DEPARTMENT OF EDUCATION

CURRICULUM P1, J1

PHYSICAL AND HEALTH EDUCATION INTERIM REVISION

MOVEMENT AND GROWTH

1967

PHYSICAL EDUCATION
HEALTH
Interim Revision

This booklet is issued so that schools may continue to develop their physical and health education programs, pending the report of the Provincial Committee on Aims and Objectives. The interim revision presents new approaches to movement and growth which may serve to enrich programs in current use.

These interim courses are published for *study*, for *discussion*, and for *optional implementation* in part or as a whole.

In the development of this outline, invaluable assistance was received from many individuals and groups. Comments and suggestions will be welcomed.

Take a ball and go to work at once. See page 21.

PHYSICAL EDUCATION

CONTENTS

THE NATURE OF MODERN PHYSICAL EDUCATION . . 5

CHARACTERISTICS OF YOUNG CHILDREN . 6

HOW THEY LEARN . . . 7
  Exploration, Repetition, and Creation 7
  Learning from other children 7
  Learning from the Teacher 7

AN ANALYSIS OF MOVEMENT . . 9
  Body Awareness — the "what" of movement 9
  Space Awareness — the "where" of movement . 9
  Quality — the "how" of movement . . 10
  Relationship — the "with what or with whom" of movement 10

SOME SUGGESTIONS FOR TEACHING 11
  How to begin 11
  Useful Stages in Teaching . . . 11
  Development of Lesson 12
  Observation 15

CLASSIFICATION OF THE COURSE CONTENT . . 16
  Functional Movement 16
    Gymnastics 16
    Games 18
  Expressive Movement 19
    Creative Dance 19
    Folk Dance 19

SUGGESTIONS FOR ORGANIZATION . 21

REFERENCE BOOKS . 21

EVALUATION 22

THE NATURE OF MODERN PHYSICAL EDUCATION

Since the publication of earlier statements* by the Department of Education, the trend in Physical Education has put greater emphasis on the pupil's individual development and on the role he plays in working out his own movements and activities. This, in turn, has changed the role of the teacher.

Today, children are much freer than they used to be in their own classrooms — they discuss their work or pick up materials and equipment, they visit centres of interest outside the school. Their environment is much less rigid and confined. Under these circumstances, children will find the gymnasium not an antidote for a restrictive classroom but a setting for learning through physical movement.

If on the other hand, the child is confined to his seat for long periods of time and active pupil involvement is at a minimum, he is likely to have a different initial response to the opportunity for activity. A visit to the gymnasium will provide a boisterous release of cramped bodies and high spirits — which, of course, can be valuable in itself. Nevertheless the Physical Education period should provide much more than a relief from classroom rigidity.

If teachers want to educate our children through physical movement, they must create an environment which stimulates the child to think. He needs opportunities to explore the possibilities available, to select the action suitable for his purpose and to consolidate his efforts with practice. The process of learning becomes an accumulation of experience, each one valuable in itself as well as a means to an end.

Once his sheer appetite for movement is satisfied, the child has a desire to develop skill. We give him opportunities to control a ball or to climb a ladder. In the initial stages, these skills will be sufficient in themselves; later, he will use his skill with a ball to play a game and his skill on a ladder to reach some hitherto inaccessible object.

In addition to skill, we want to give the child versatility, to help him develop in various ways so that specialization in one area does not lead to a narrow development unsuited to growing children. Children need to be skilled in body management, dexterous in the use of apparatus, strong as well as graceful, nimble as well as steady.

Movement and growth are important at all ages. This primary-age girl is stressing hands and feet in movement. See page 19.

Finally, we want to develop a sensitivity to quality and standards in movement. Can the child appreciate what it feels like to stretch to the utmost limit? Can he recognize this when he sees someone else doing it? Can he use this 'stretch' in a game, in gymnastics, in a dance?

---

*Curriculum P.5 and J.5

CHARACTERISTICS OF YOUNG CHILDREN

Children at the primary and junior level have certain characteristics which influence the whole program.

PRIMARY DIVISION

Children in Primary Division are lively, eager, and restless. They seldom walk sedately down the street if they can think of some more interesting means of locomotion. Their large muscles are better developed than their smaller ones. Ideally, they should have the use of large apparatus on which they can hang, climb, and swing. If this is not available, they should have the opportunity to leap and run and use a variety of equipment of the smaller type — balls, bean bags, ropes, and hoops. They have a short attention span and should engage in a great variety of activities, each of short duration.

They are individualistic, but towards the end of the Primary Division they can play in groups for short periods, after which they may have emotional outbursts. Therefore, most of their activities should be organized on an individual basis. Complicated team games and relays are not suitable for this age group.

These children are dramatic, imaginative, imitative, and very responsive to rhythmic sound; they need opportunities to create and explore and should be given the chance to respond to the rhythmic beat of a record or percussion instrument in a dance.

These six-to-eight-year-olds are curious and like to find out things for themselves: they need to experiment and handle different types of equipment. Above all, the six-to-eight-year-old seems to be in perpetual motion; he needs vigorous activity, but he tires quickly and needs frequent rest periods. Physical activity lessons should be short and frequent. (Daily sessions of 20 minutes are better than twice-weekly periods of an hour.)

JUNIOR DIVISION

Physically, there will be a wide diversity in growth and body characteristics. Hand-eye co-ordination has usually improved since the child was in Primary Division so that the teacher can expect a corresponding increase in skill in play. The child's attention span is increasing; he is capable of working with a specific purpose in mind and concentrating for quite a long period, provided that his interest in the project is sustained.

This is the period when the gang or club is all important. The nine-to-eleven-year-old feels he must conform to the gang pattern — his sense of loyalty to its members is very strong and he has great need of their approval. He is ready to work in small groups in his Physical Education classes; he is prepared to accept responsibility for the equipment and some of the organization; he likes to make decisions in choosing teams and activities; he is able to give help to individual members of his team. The teacher should make sure that the same few children do not always have the benefit of these experiences. It is just as important for the child to learn to accept suggestions as it is for him to make them.

Boys in this age group are often boisterous and rough while most girls, on the other hand, prefer quieter activities. Children will never be more agile than they are between the ages of nine and eleven, although they will increase in strength and endurance. They need a tremendous amount of activity, but competition in sports should be brief and should not lead to overstrain.

INDIVIDUAL DIFFERENCES

In spite of the foregoing generalizations, each child is an individual whose potentialities are his alone. Some children tend to be short and fat; some to be tall and thin. Differences in environment, diet, health practices, and sleep habits are often evident also, and it is hardly to be expected that these children will all have developed the same skill when it comes to physical activities. Children differ in the quality of their movement. To some of them, strong, direct, and sustained movement comes naturally, while others find themselves more at ease with light, flexible, and quick movement.

The teacher must, therefore, be prepared to accept each child at his own level, to plan her lesson to make allowance for these individual differences, and to give each child an opportunity to progress as far as possible. The classroom teacher, particularly in the lower grades, seems the natural person to have a knowledge of the whole picture. She controls the general pattern of the school day, she controls the physical environment, she knows the home circumstances, she is aware of health problems. The gymnasium becomes an area in which she sees her children in an entirely different context. A child who is insecure in the classroom may develop confidence in handling a ball or rope. He may show creative ability in movement, which can be used as a stimulus to creative work in art and writing. The ability of the teacher to look at the whole picture will have an influence on the development of the child as a whole person.

HOW THEY LEARN

A skilled teacher knows that a child learns in many ways and she is alert to make use of these different ways at the appropriate moment.

EXPLORATION, REPETITION, AND CREATION

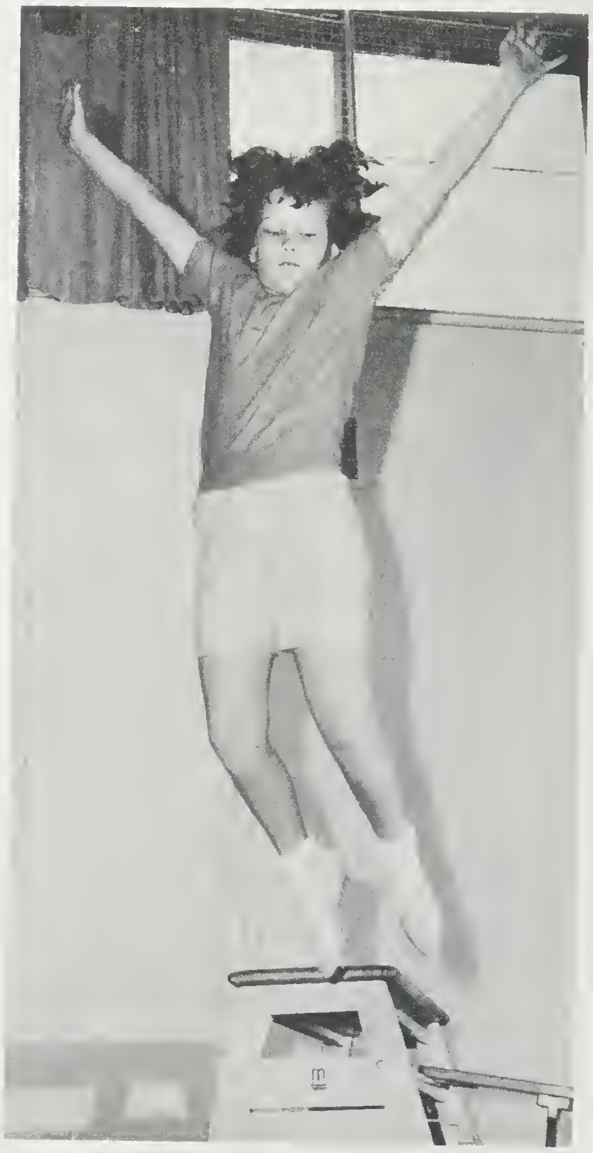
To repeat — in Physical Education periods, the child needs access to a wide variety of equipment so that he may learn the possibilities of each. He needs to experiment with bats and balls, to find out what he can do with a hoop or a rope. Above all, he needs to experiment with the use of his own body. How far can he stretch or how tightly can he curl? What happens when he takes his weight on his hands? How many different ways can he roll? Learning to manage the body leads to greater control and skill on large apparatus, in games, and in dance. From time to time the exploration and experiment seem to lead nowhere, but if the teacher is patient the child almost seems to teach himself. Sometimes he needs help in selecting from the material discovered and always he needs an opportunity to consolidate his gains with further practice. A pattern gradually emerges and the child discovers something new. It is like learning to skate or to ride a bicycle — one has to go through the awkward experimental searchings for balances until suddenly everything falls into place and 'it is there'.

LEARNING FROM OTHER CHILDREN

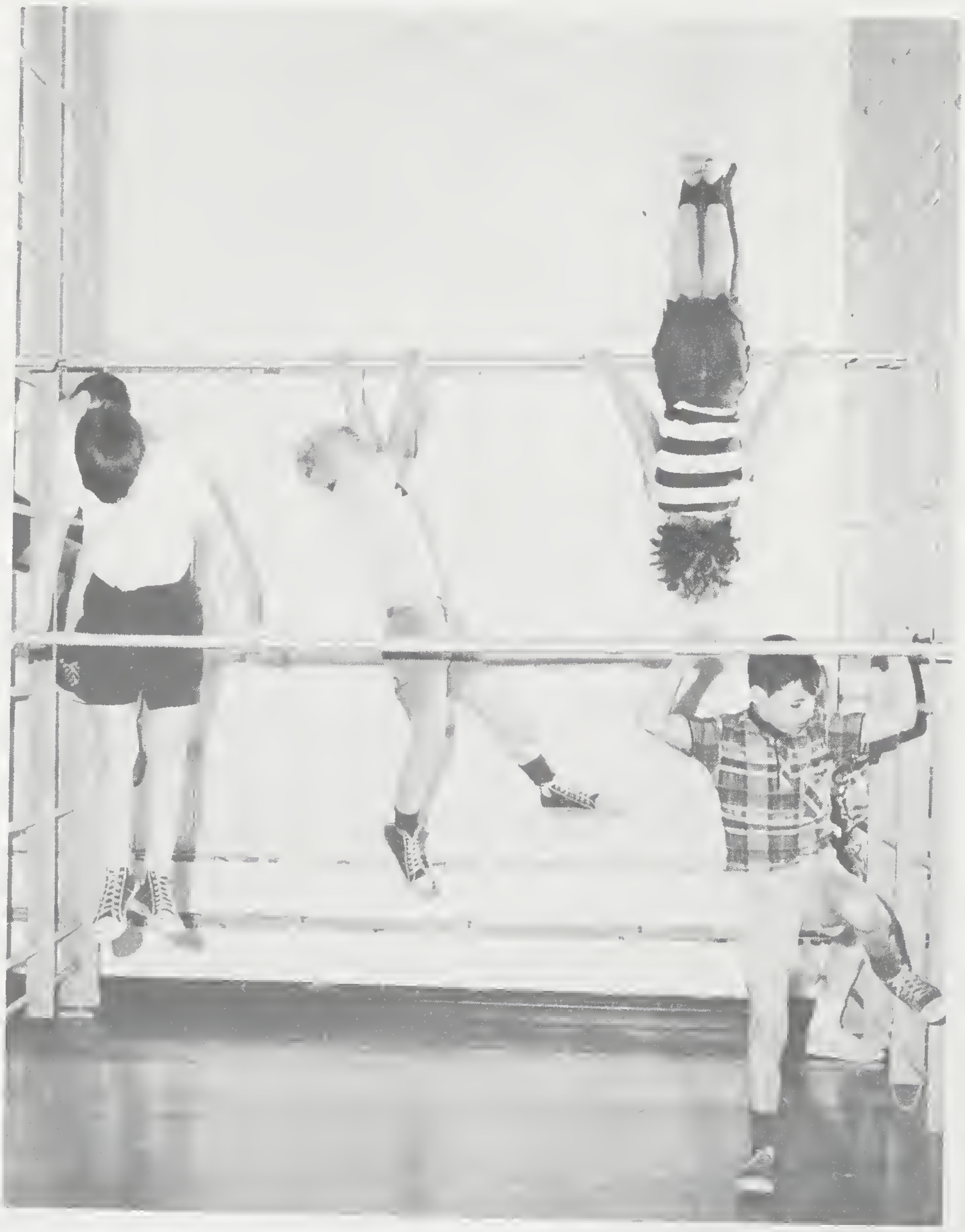
Children frequently learn from each other. They may be encouraged to observe other children at work, but it is often necessary to focus their observation in a specific direction. For example, the teacher might say: "Watch how John holds his head," or "Look at Mary's good stretch — which part of her body could be stretched a little more?" or "Try your own movement again and think about these points." Obviously, the teacher does not wish to encourage them to believe that every child can reach the standard of his neighbour, but children are often more willing to accept their own limitations than are their parents and teachers.

LEARNING FROM THE TEACHER

From their teacher, the children learn much that is not specifically taught. Her greatest responsibility is to set the stage and to create a suitable atmosphere for learning to take place. The teacher no longer issues militaristic commands nor describes precisely how to perform the activity. Rather she uses a more conversational tone and gives her instruction in the form of problems which the children are to solve in terms of movement. For example: "Find a way to make your ball travel around the floor," or "How can you travel along the bench with your feet leading the way?" Every child's answer to the problem will not be the same, but the teacher should accept his solution and take him on from there. This method of approach gives each child the satisfaction of working at his own level without having to achieve the skill of the abler child. It is not, however, meant to imply that the teacher abdicates all responsibility for the development of the lesson. Indeed, she needs to be more sensitive than ever to the needs of the children. It is her responsibility to choose the general lines along which the lesson will develop. This she will be able to do only from her observation of the particular needs of the class. It is her responsibility to choose the equipment (although sometimes the children might be given this privilege). Above all, it is her responsibility to train her powers of observation to the point where she has almost instinctive sensitivity to the needs of the moment. When does she abandon the purely experimental stage and begin to guide and direct? If she leaves it too long, the children will become bored and the lesson will develop into a free play period. The answer lies in the children themselves and in the teacher's ability to observe when they are ready for the next move. The teacher must know when to leave the child to himself and when to intervene with a specific suggestion.



You have the beginning of a wall shape. Can you make your legs part of it?



What sensible tasks can be done on this apparatus? See page 10.

AN ANALYSIS OF MOVEMENT

In order to set suitable problems, each teacher needs to understand the following simple analysis of movement. These factors in movement should not be taught as a series of lessons in isolation, but should rather be used in relation to all three areas of the Physical Education program — Gymnastics, Games, and Dance.

The movement of the body can be considered under four headings:

BODY AWARENESS
or
WHAT CAN THE BODY DO?

In the old physical training class the different parts of the body were exercised in isolation. It was considered necessary to include an "arm" exercise, a "leg" exercise, a "trunk" exercise. Then we passed through a stage where a section on "big muscle activity" was included in every lesson. Nowadays we think of "body management" which involves the body as a whole. If the body is to be the instrument of movement, the child must be aware of one part of the body in relation to another part or to the whole. This is termed 'body awareness.' Body awareness involves the whole body and its individual parts, including the upper half, the lower half, one side, the other side, hands, feet, stomach, back, shoulders, head, neck, arms, seat, elbows, and knees. The interplay and relation of these parts to each other and to the whole body is one of the teacher's concerns in movement education. She and the children need to be aware of what the body can do in the following situations:

movement on the spot — support or balance — repetitive movements which do not advance the action

locomotion — which develops from transferring the weight from one part of the body to another.

Also, the pupils may become aware that the body, being flexible, can assume various shapes such as twisted, curled, and stretched.

SPACE
or
WHERE CAN THE BODY GO?

(a) **Personal space** — the space around the body when it is operating from a fixed base. (When the base shifts, a new area of personal space is created.)

(b) **General space** — the space in the room available for movement. Spatial movement, both personal and general, may be in terms of:

- DIRECTION — forwards, backwards, sideways, up, down
- LEVEL — high, medium, low
- SHAPE — the body moving in space may assume a particular shape consistent with its particular function

What body shapes are shown here?

— for example: ball shape, pin shape, wall shape, twisted or angular shape

- PATTERN — the pathway of movement in the air or on the floor

QUALITY
or
HOW CAN THE BODY MOVE?

- TIME — the speed at which movement takes place; quick, slow or any varieties between — or, more expressively, sudden and sustained
- WEIGHT — derived from the muscular tension of the body — strong, light or, more expressively, firm and fine
- SPACE — the path of the body in space — direct or flexible
- FLOW — smooth or jerky movement — free or bound flow.

RELATIONSHIP — WITH WHAT OR WITH WHOM DOES THE BODY MOVE?

This involves the relationship of the body and its movement to the room in which the child is working, to the equipment he is using, and to the people with whom he works. The child first learns to manage himself and his own individual piece of apparatus without interfering with others. He learns to make the best use of the space available to him. When he uses large equipment he has to manage his approach to that equipment and the suitability of his actions on arrival. How successfully can he get *over* the box, *up* the rope, *along* the bar? After he has learned to handle himself reasonable as an individual, he may explore partner situations. He learns to work with another person — matching, mirroring, contrasting that person's movements from various positions in relation to himself. Eventually the child learns to work with a group of people and before the end of the junior grades, he learns to join in team situations or group dances. Sensitivity to others must be encouraged. As the child grows in maturity and experience, he will show an increasing ability to adapt to the give-and-take of group experience.

Watch Betty's work. Which direction is she using? See page 15.

Fill up the whole space. Warm up having your weight sometimes on the floor, sometimes in the air. See page 21.

SOME SUGGESTIONS FOR TEACHING

HOW TO BEGIN

If the teacher is inexperienced in using these movement factors and the problem-solving approach for Physical Education lessons, she could begin by 'freeing the children' to use their own ideas:

- find different ways of travelling around the room without using your feet (body awareness)
- put a hoop on the floor and find how you can get *over* it, *into* it, *out* of it (relationship)
- use a rope with a partner, stressing a change of speed (relationship, quality)
- travel along the bench with your head leading the way (body awareness)
- find a pathway which uses each piece of the apparatus (space awareness).

The teacher should then take time to watch the children. Probably there is great variety in their work and if the children are allowed to observe each other, this stimulates additional ideas. Gradually the teacher learns to see where they need help:

- perhaps they are concentrating on the space in front of them. Can they use the space behind and to the side?
- perhaps they seem to work close to the ground. Can they use high and medium levels?
- are they using all the different parts of their bodies? Can they use shoulders as well as hips?
- are their movements usually jerky? Can a smoother part be included?

USEFUL STAGES IN TEACHING

These would include:

- freeing the children — working for variety
- selecting movements satisfying to the child
- practising selected movements and improving control, or increasing the difficulty
- final level of performance — to show command and understanding.

Travelling along the bench with the hands leading, one of many tasks for this apparatus.

DEVELOPMENT OF LESSON

As her knowledge of movement develops, and her powers of observation increase, the teacher will be able to plan a whole lesson around a movement theme such as curling and stretching at different levels, taking the weight on different body parts or working with a partner to develop sequences of movement. When she has reached this stage, the earlier part of the lesson should develop the movement theme in terms of floor work, while the culmination of the lesson is reached when the same theme is transferred to apparatus.

In all cases the first part of the lesson should bear a relationship to the culmination whether the latter be in the area of gymnastics, games, or dance. This simple development of the theme through preliminary experiences to culmination leaves room for more flexibility than the four-part lesson plan recommended in Curriculum P.5 and Curriculum J.5.

The theme should be selected from the analysis of movement listed earlier in this chapter. It should be selected by the teacher on the basis of the children's needs. Suggestions for the development of three themes follow. The progression would not necessarily be the same with each class. *In no case is it intended that all the points be dealt with in one lesson.* Here are suggested developments for three themes:

Theme One — Travelling

FLOOR WORK

(1) Moving on the feet

- the pathway of movement
- change of direction — forwards, backwards, sideways, up, down
- change of speeds
- change of foot pattern — moving feet singly, together, crossing
- change of level — close to the ground, high up

(2) Moving on different body parts

- feet and hands used in conjunction
- use of other body parts — the trunk, shoulders, knees, elbows. Resulting actions will probably include crawling, shuffling, sliding, rolling, rocking
- with change of direction
- with change of speed
- with change of level
- with a partner
- making a sequence of movement — give it a clear beginning and ending

APPARATUS

- finding ways of travelling using tumbling mats, benches — broad or narrow side upper most — low tables, canes or hoops supported on benches, ropes and jumping stands, climbing apparatus with ladders and ropes

Theme Two — Weight Bearing

FLOOR WORK

- taking the weight on different body parts — the back, shoulders, knees
- exploring the possibilities of holding the weight on matching body parts — the knees, the hands
- holding the weight on two different body parts — a foot and a hand
- travelling and stopping — controlling the body weight
- stretching and curling on different body parts
- transferring the body weight from one part to another and developing sequences of movement
- activities involving partners

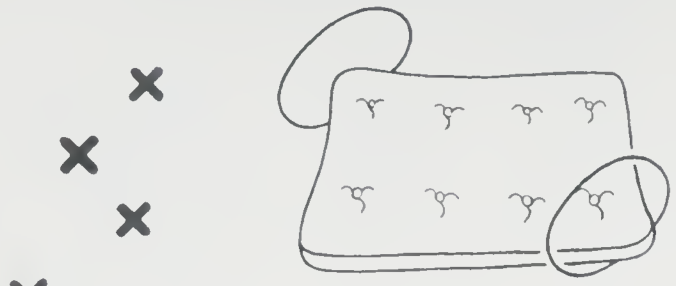
APPARATUS

- applying body weight to the apparatus in suitable ways
- tumbling mats, benches, agility boxes, box horse, bars on the climbing frame

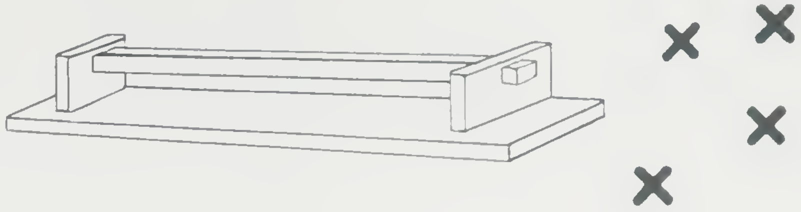
GROUP WORK WITH LARGE EQUIPMENT

INDOORS

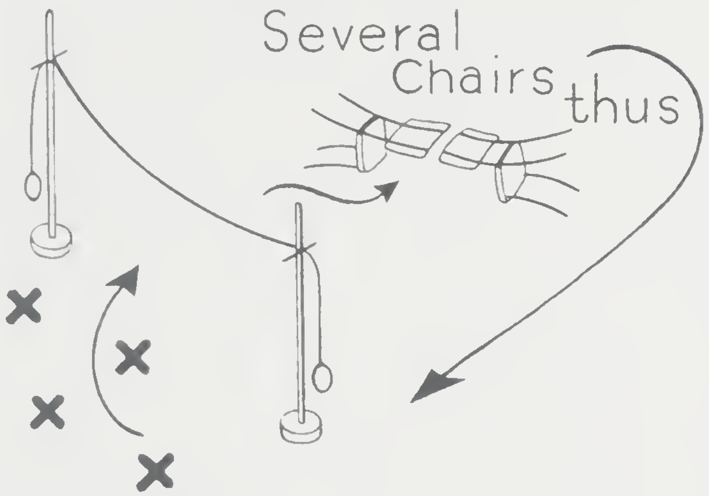
Explore — curling up on mat

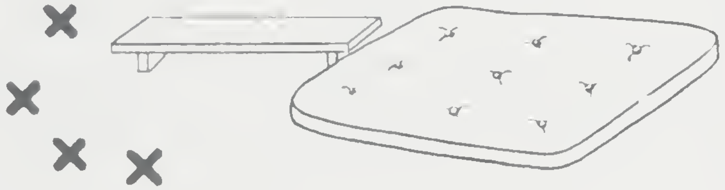


Explore — bench with balance bar up

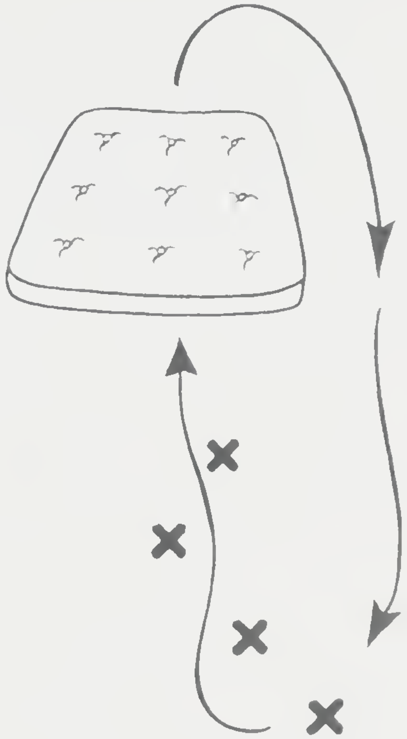


Change of Weight — moving from one type of equipment to another and using the floor



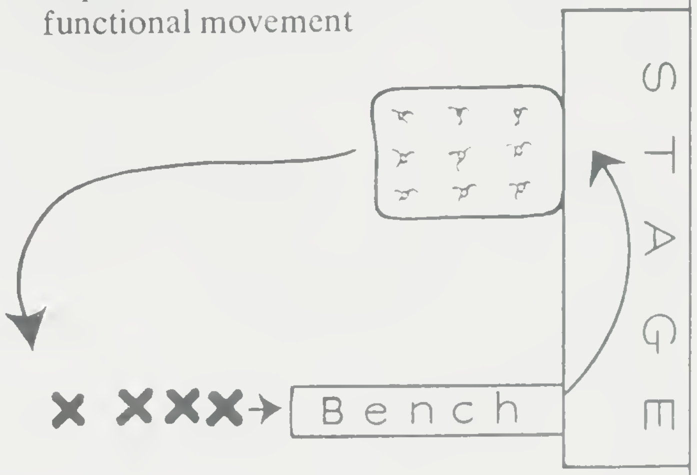


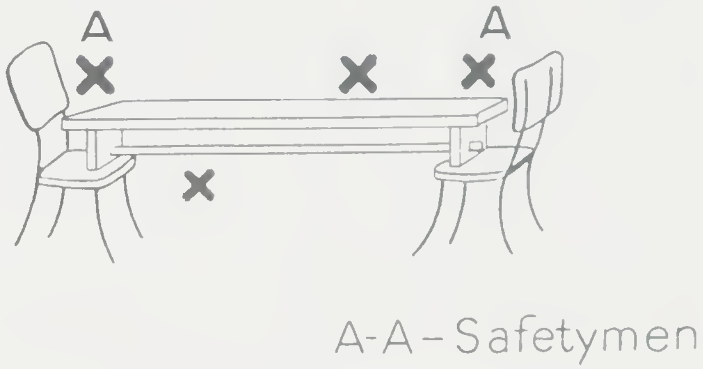
High — Low



Animal Walks on mat and floor

Explore — with continuous functional movement

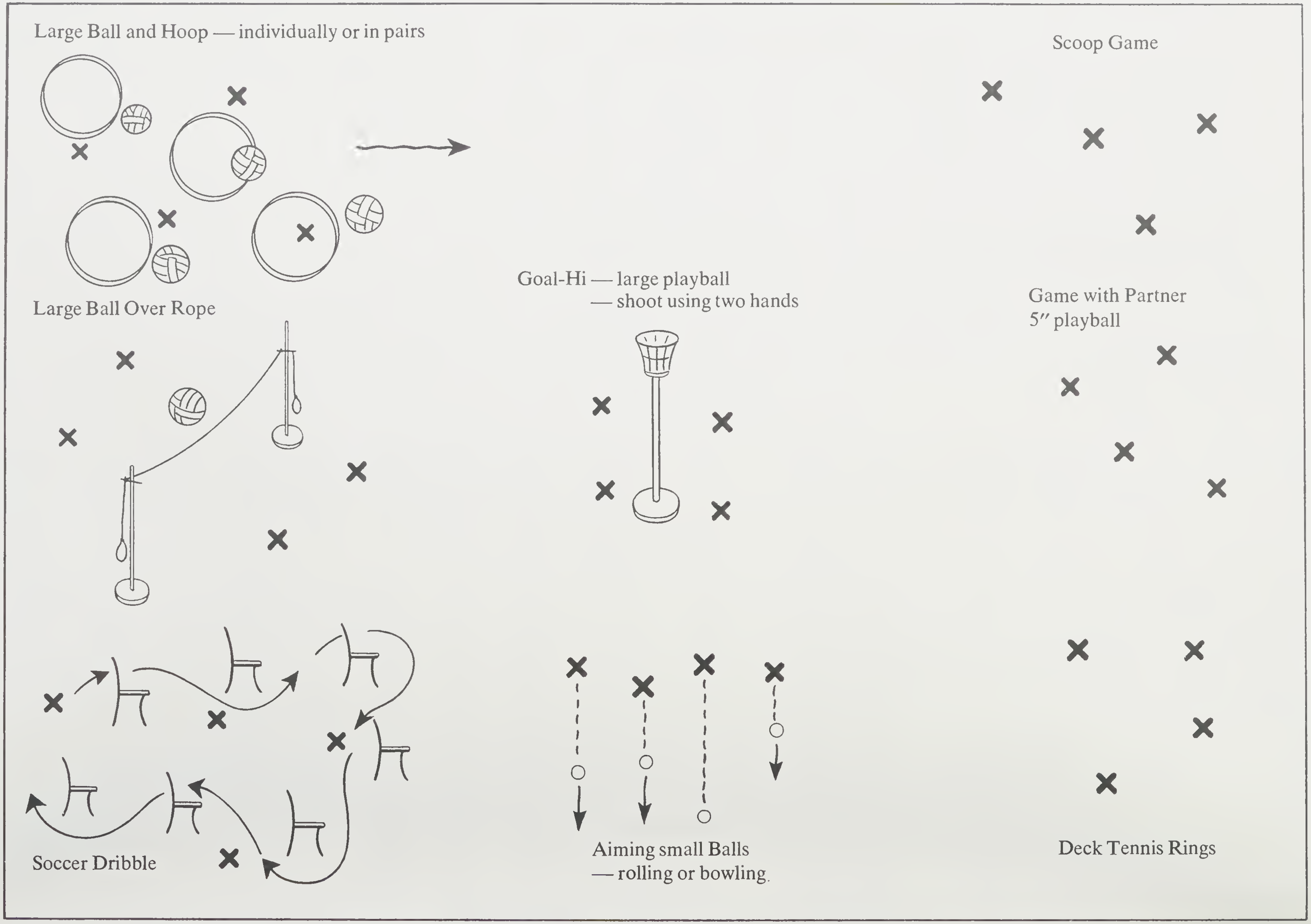




Explore — bench on chairs

GROUP WORK FOR THE DEVELOPMENT OF GAMES SKILLS

INDOORS OR OUTDOORS



Theme Three — Relationship with a Partner

Children will find it difficult to work with a partner until they have achieved reasonable skill in managing their own bodies. They will probably reach this stage in the Junior Division and then only if they have had good movement experiences at the primary level.

FLOOR WORK

- working alternately, 'taking turns'
- copying a partner's movement
- using a partner as an obstacle — one partner making a shape and the other moving through, over, or under the shape provided
- matching movement with a partner
- leading and following
- building a contrasting sequence
- taking a partner's weight

Partners may work in varying positions related to each other:

- side by side, facing the same direction
- side by side, facing in opposite directions
- one behind the other
- opposite to each other

APPARATUS

- selecting starting positions
- selecting pathways
- building a contrasting sequence

OBSERVATION

Observation is an important tool at all stages of the work. One writer has defined observation as "seeing with understanding"* and the more a teacher is able to cultivate this skill, the more she will be able to help her class.

The teacher's first responsibility is to see that the children understand the problem she has set them. Some children may need stimulation and encouragement. The teacher may wish to select certain children to show what they are doing. Perhaps she will choose them because they show variety, or because they all have a particular point in common which she wants to stress. The teacher should try not to select only the very skilled performer to demonstrate. Frequently the less spectacular children have much to contribute.

Children can learn a great deal from observation. They will gain in movement imagination, understanding of obscure points, and in appreciation of their own movement abilities in relation to others. There are several approaches to the use of observation:

- selection of several children to demonstrate to the rest of the class;
- dividing the class into two sections — one section moves while the other observes;
- partners working together, observing and moving alternately

In all cases, observers should be given some direction *before* they watch the work. For example, the teacher might say: "Watch Tom, Jean and Carl. Which directions are they using?" Or she might say, "Can you find someone who is using a change of speed?"

Following the observation period the children should be encouraged to answer the question from what they have seen, to analyse what they have seen, and to make constructive suggestions. All children then return to practice with renewed energy and understanding, thinking about the points they have seen and discussed. Observation should result in improved clarity and skill in the activity involved.

The observation period should be brief and the teacher should not allow the activity period to turn into a discussion session.

---

* *Teaching Gymnastics* by E. Mauldon and J. Layson

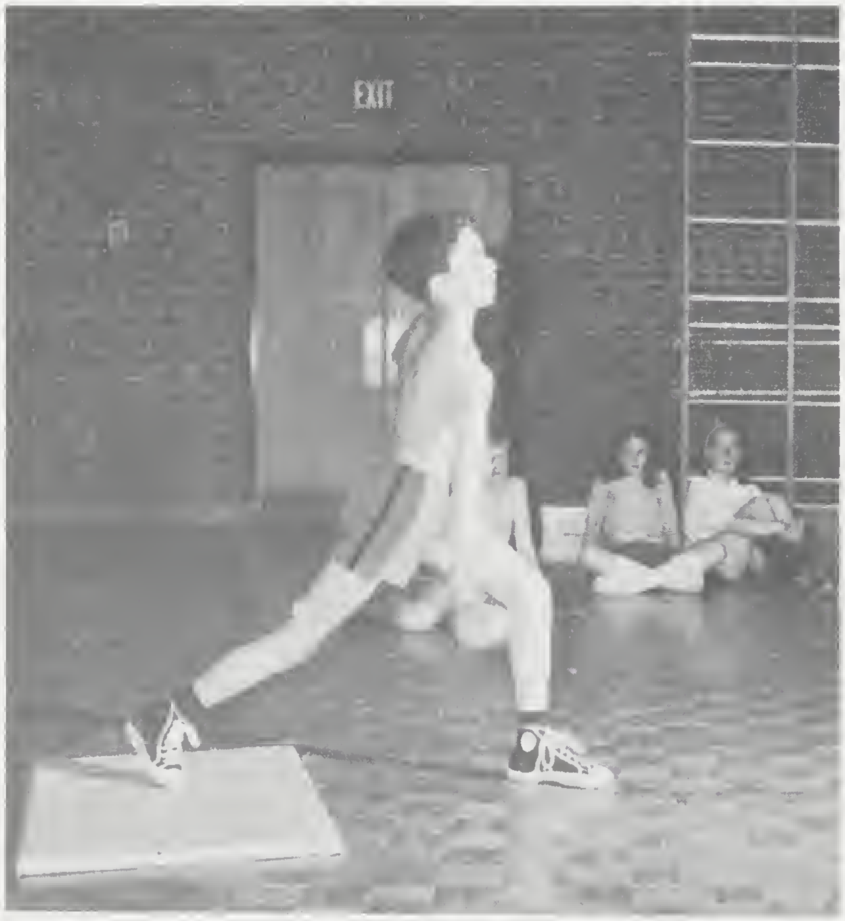
CLASSIFICATION OF THE COURSE CONTENT

All activities of the Physical Education program fall into one of the following three areas — Gymnastics, Dance, and Games (including Track and Field, Swimming, and Skating). Many teachers now use each section of the program throughout the school year rather than blocking them rigidly. For example, one lesson in three might be gymnastics rather than eight weeks of gymnastics followed by three weeks of dance followed by six weeks of volleyball. The factors of movement should be used in relationship to all three areas.

Movement is of two types, functional and expressive:

FUNCTIONAL MOVEMENT

Functional movement is used to perform a task. It involves management of the body in a variety of situations and as far as Physical Education is concerned, is used in gymnastics and games (including track and field, swimming, and skating).



Softball underhand pitch. One foot in contact with plate until ball is released. See page 18.

Gymnastics is the 'body management' part of the Physical Education program and therefore has an influence on all activity. In the primary grades it is often difficult to separate the areas of gymnastics and games, but in general the teacher must know that if the children are using benches, agility boxes, tumbling mats, or climbing frames, they are laying a foundation for later work in gymnastics. Sometimes the teacher is concerned about safety, and it is comforting to realize that children will seldom extend themselves beyond their ability unless pressured to further efforts before they are ready. Try, therefore, not to be concerned if George reaches the top of the climbing frame, while Joan is still on the bottom rung. Leave Joan alone until she is ready to venture further. Do not let George know you are anxious. If you do, he will perhaps become nervous also.

There are, naturally, certain precautions that the teacher should take:

- the type of activity should be influenced by the space available
- suitable clothing should be worn
- each piece of equipment should be in good condition
- the children should learn to move and place equipment safely
- the children should learn to work without disturbing each other.

Class management is simpler and safer if each child is busily occupied, and does not have to wait for turns. Sometimes equipment is in short supply. If there is only one box horse, for example, arrange for some of the children to work with other apparatus.

Find ways of getting under and over the ball. See page 18.

A ball for everyone — volleyballs, rubber balls, soccer balls. See page 18.

Make up a game using a ball, a rope and a partner. What are your rules? See page 18.

Which part of the hand is best for controlling the ball? See page 18.

Try not to hurry the children; give them plenty of time to experiment and explore. If John always swings at the bottom of the climbing rope, he is probably getting some satisfaction from it. Give him time to establish his security before you attempt to steer him higher up the rope.

Arrange to have children work in small groups. Four to six children at a work station is usually a safe and efficient number. If the children work well together it is sometimes an advantage to allow free movement from station to station. The apparatus is placed in position, the children choose where they would like to begin and move on as they are ready.

It is again strongly recommended that the Gymnastics part of the program be carried on throughout the school year (one lesson in three is suggested) since the body management work affects all the other parts of Physical Education.

Games: As mentioned previously, it is sometimes difficult to separate the areas of gymnastics and games at the primary level. The teacher should realize that if the children are using such equipment as balls, bats, and targets, they will gain skill in their games program. In the early stages, they need individual practice with bean bags, balls of various sizes, bats, and quoits. Plastic balls and bats, scoops, and hockey sticks provide useful practice in confined areas. The teacher should not try to organize these primary children into complicated team games.,The practice itself is sufficient game and stimulation for children at this level.

By the time the children reach the upper junior level, they are usually ready and eager to take part in group and team games. The competitive element is entering the picture and the division between gymnastics and games is more clear cut. Even here the teacher should not think only in terms of major team sports. Rules should be adapted, net-heights may be adjusted, and the groups used may be smaller according to the ability of the children.

Each teacher will need to assess her own children. Volleyball skills, for example, are too often introduced before the children have the necessary dexterity and strength in their wrists.

In introducing games-skills the exploration-experimental method can be used with advantage, though here again the teacher must be ready with specific help at the crucial moment.

Quantities of balls should be used and children should rarely be asked to work in large groups where opportunities to participate are limited. Balls need not always be of the regulation type, and teachers will find that inflatable rubber playballs in large sizes are useful.

Swimming, as part of the Physical Education program, is certainly to be commended. Very few elementary schools have swimming pools, but it is becoming increasingly usual for school authorities to make use of neighbourhood pools and secondary school facilities during some convenient period of the school year. A suitable grade is selected for swimming instruction (perhaps Grade 3, 4, or 5) and a block of lessons is arranged for each class of that level. This is to be encouraged since experience and research indicate that this is a profitable age at which to introduce this important skill.

What movements must you perform to "give with" the ball?

Does the music tell you to curl or twist?

EXPRESSIVE MOVEMENT

This term means using the body to express an idea or a feeling as in dance. All young children express their feelings through movement; a child stamps his foot when he is angry, takes a joyful leap of exuberance when he is suddenly pleased. The teacher can direct this natural movement into dance if she can provide suitable stimuli. Thus dance, as part of Physical Education, takes its place as part of the Creative Arts program.

Creative Dance: At first, young children may be allowed to move spontaneously to music or to a percussion instrument. They may tend to confine their movement to arms and legs. In this case the teacher can use her knowledge of movement to encourage the use of different parts of the body, such as knees, elbows, spine, the use of different levels (high, low), or of different directions (forward, backward, sideways).

The children should be encouraged to listen to the piece of music. "When does the music tell you to stop?" "Where does it ask you to twist or turn?" "Where must you be strong?"

Sometimes a movement idea itself may provide the stimulus for a dance. For example, a dance may be built upon the interplay of strong and light actions or upon high and low movements.

Often the dance takes on a dramatic form; for example, The Toyshop, Firecrackers, a simple verse, or a story from the classroom.

It is not always necessary to have an accompaniment for dance, but if the teacher does use the piano she must be sufficiently skillful to produce the desired response. Often it is much simpler to use percussion instruments, played sometimes by the teacher and sometimes by the children as they dance. Perhaps the most useful is the tambour or drum. Percussion instruments which may be used to elicit specific types of movement are:

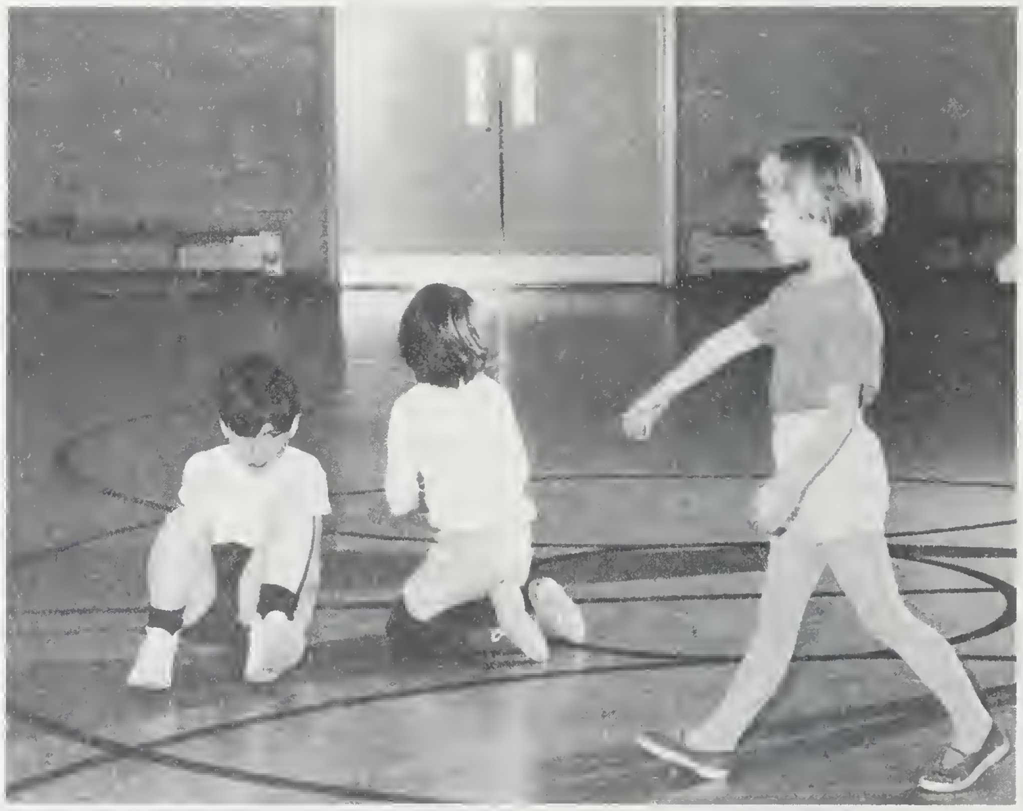
- *gong or cymbal* — sustained movement;
- *cymbals* — sudden, strong movement;
- *triangle* — light, sustained movement;
- *tambour* — shaking movement;
- *maracas* — light, jerky movement.

To be assured of good tone, teachers are advised to buy percussion instruments of good quality. These can be bought from a number of music supply firms.

Records, particularly the Listen-More series, are also useful as an accompaniment for dance.

Folk Dance: Many teachers are using an exploratory approach to the teaching of folk dance. At the beginning, children are encouraged to experiment with different foot patterns and floor patterns before they select one for a specific dance. Primary children in particular need to extend their experience in the creative dance field before advancing into traditional folk dance patterns.

. . . stressing hands and heels. See page 19.



Dancing at different levels. See page 19.

The music tells you to stretch with your whole body this time.

SUGGESTIONS FOR ORGANIZATION

The following suggestions are aimed at simplifying the teacher's problems in conducting a smooth-running Physical Education program:

- to avoid wasting time, have the children find a suitable place and begin work as soon as they enter the gymnasium. Suggestions for this free activity period might be made before they leave the classroom.
- use a natural tone of voice rather than militaristic commands.
- use your whistle as little as possible; you may be able to dispense with it altogether.
- use a free 'scatter' formation for most work. This usually makes maximum use of the space available.
- have equipment easily accessible and let the children learn how to handle it.
- use quantities of equipment whenever possible — individual balls and ropes.
- if the children are working in groups, arrange for the groups to be small; this avoids long lines of children waiting for turns. Eight groups of four are better than four groups of eight.
- if some types of equipment are in short supply, arrange for some children to use different equipment.
- arrange your large equipment in interesting ways and use different combinations (see sketch plans).
- encourage your children to dress suitably for Physical Education class. This means shorts, thin tops, running shoes or bare feet. If the teacher herself wears running shoes, she will be more comfortable and will also set a good example for the children to follow.
- try to be conscious of the need to improve standards and quality of performance at all times.

Gliding forward lightly.
See page 19.

REFERENCE BOOKS

Education in movement, Cameron, W. McD, and Pleasance, Peggy

Movement education for infants, London County Council

Teaching gymnastics, Mauldon, E. and Layson, J.

Modern educational gymnastics, Pallett, G. Doreen

Creative dance in the primary school, Russell, Joan

(All books are available from Canadian Folk Dance Service, 605 King Street West, Toronto 2B, Ontario.)

EVALUATION

How can the program be evaluated? It might be wise to consider some of the changes one hopes to see as the children journey through the years from six to eleven. Here are some suggestions:

- an increasing ability on the part of the children to manage their own bodies in gymnastics, in game and in dance
- an increasing understanding of movement principles and a corresponding increase in the variety and richness of their movement responses
- an increasing ability to solve problems in movement
- an increasing skill in the use of small equipment — balls, bats, ropes, bean bags, hoops, quoits
- an increasing ability to tackle larger equipment such as mats, balance benches, agility boxes, box horse, climbing frames
- an increase in self-confidence
- an increase in the child's ability to handle himself in relation to other people
- an increasing skill and enjoyment in the expressive side of movement — an introduction to the creative art of dance and a correlation with the art and music program
- an increasing development of vocabulary through the use and understanding of terms in the movement program — high, low, curled, stretched, forward, backward, sudden, sustained, over, around, under, through, between.

When evaluating a child's progress, the teacher should compare his present ability with what he could do earlier in the year. This is far more important than what he can do in comparison with the boy next door. Some evaluations are comparatively easy to make. It is obvious if Johnny can catch a ball reasonably well, while at the beginning of the year, he always dropped it. It is obvious if he can jump higher and further. It is obvious if he can skip where formerly he merely became entangled with the rope.

Some judgments are more difficult to make: "Does he show increased ability to work with a partner or a group of other children?" "Is his sense of security increasing?" "Is he reliable where his own safety and that of others is involved?"

When these criteria are used for evaluation, marks and grades are unrealistic. The teacher's comments will inform the parent of the child's development.

Whatever the answer may be, the teacher should capitalize on the Physical Education periods to give her an increased knowledge of the primary and junior children in her care. The child will never be more agile than he is between the ages of nine and eleven. In any good Physical Education program, the teacher will foster and encourage the child's natural love of movement in all its broadest aspects. It is an exciting responsibility since it is in this division of the school that the base is laid for future progress and life-long enjoyment.

HEALTH

CONTENTS

HEALTH IN THE CURRICULUM 25
- School Environment and Atmosphere 25
- The Conceptual Approach 25
- Teaching Methods 26

SUGGESTED TOPICS 27
- Primary Level 27
- Junior Level 27

EVALUATION 27

HEALTH IN THE CURRICULUM

Health should be regarded as a positive state of physical, mental, emotional, and social well-being — not merely an absence of disease. It must, of necessity, be the combined responsibility of home and school. To be successful, health teaching must encourage the development of sound health habits based on accurate information. The child's learning should lead to behavioural changes aimed at improving the general pattern of his living.

Health cannot be considered as an isolated subject in the curriculum. It must be regarded more as a "way of living" which permeates the whole of the child's day.

Safety education is closely linked with health education. Its main purpose is to establish practices to prevent injuries and loss of life. The importance of good safety practices is emphasized by statistics which show that more school-age children die of accidents than from all other causes together. Road safety is of particular concern. In many schools there is excellent liaison between the school and the local police department — which is certainly to be encouraged.

SCHOOL ENVIRONMENT AND ATMOSPHERE

The school is responsible for providing the best possible environment for learning — whether physical or psychological. Thus, the teacher must be concerned with tangible factors such as temperature and the size of classroom furniture as well as the equally important intangibles such as mental health. For good mental health, children need a relaxed, happy, and stimulating school atmosphere. In general, mental health for young children depends largely on achievement of reasonable success in their day-to-day activities. The pupils engaged in purposeful activity with a kind and skilful teacher are in a happy situation for the development of good mental health.

The teacher can accomplish a great deal by her unobtrusive observation of the children from day to day. Symptoms of ill health such as a rash, general lassitude, or a sore throat, should be brought to the attention of the parents or appropriate authorities. The teacher, herself, must be ready to seek expert help if she meets a particularly difficult problem in either mental or physical health. For example, conferences between teacher and school nurse will help each in understanding the child's needs.

THE CONCEPTUAL APPROACH

The aim of the health program should be to provide a pattern of attitudes acceptable to a child rather than an accumulation of unrelated facts. A recent study* conducted on a nation-wide basis in the USA has developed the following ten concepts which are regarded as the organizing elements of the curriculum.

A. **Growing and Developing**

1. Body structure and function influences growth and development and vice versa.

2. Growth and development follow a predictable sequence, yet it is unique for each individual.

B. **Decision Making**

1. Personal health practices (sleep, relaxation, activity, posture, skin care, dental health, and personal appearance) are affected by a complexity of forces, often conflicting.

2. The use of health information, products, and services is governed by the application of an individual's criteria.

3. Use of stimulants and depressants arises from a variety of motivations.

4. Food selection or eating patterns are determined by physical, mental, social, cultural, and economic factors.

---

*_A School Health Education Study_ — Bronfman Foundation, New York. 1965

C. **Interactions**

1. Protection and promotion of health is an individual, family, and community concern.

2. Whatever the environment, the potential for hazards and accidents exists.

3. There is a reciprocal relationship between many diseases and environment.

4. The family is the basic unit of society through which certain health needs can be fulfilled."

The teacher might consider these concepts in dealing with the topics suggested later in this chapter.

TEACHING METHODS

Modern methods of teaching should be used in the health program. The use of discovery, problem-solving, critical thinking, and self-direction can be just as valuable here as in the physical education program. Simple experiments in which the children discover relevant facts can be made in any classroom:

- the effects of two contrasting diets on the development of white rats

- the use of X-rays from the school dentist to study the development of teeth

- the planning of good housekeeping practices in the classroom

- the parents' visit to the school to foster good family relationships.

Since one objective of health teaching is the development of good health habits, the teacher should take every opportunity to put the instruction on a practical basis. For instance, in the case of children who eat their noon lunch at school, the teacher can give practical attention to sound eating habits and good manners in a relaxed, social atmosphere.

The teacher can also take advantage of situations which occur during the school year. A school accident, a sick pupil, the report of a drowning — all these situations could provide opportunities for valuable discussion and learning.

One criticism of health teaching in the past has been the repetition from year to year. It is obviously necessary to return to some topics at a later date. If this is the case, additional material suitable to the development of the child should be introduced. It is advisable that teachers in a particular school meet periodically to clarify the work covered. It is quite possible, for example, that both primary and junior children will be dealing with the care of the teeth. Frequent staff consultation can prevent duplication of approach.

The teacher must be prepared to have any lesson develop according to the interest and abilities of the children in her class — which will vary with the children themselves and with conditions in the community. Health — as such — may not appear on the time table. The material usually covered in this subject will be integrated with aspects of school life — science, social studies, mathematics, art, and reading.

Here are samples of the topics developed by one teacher and her children in one particular school. Many other possibilities might have been developed by this particular class.

Examples:

- VIEW OF STREET FROM SCHOOL FENCE — number of cars passing by in five minutes (noted at different periods of the day) — graphs indicating variations in traffic — different types of cars (sketches) — compile safety rules from observation of traffic (including pedestrians) — report of accident — study of statistics on traffic accidents — the work of the police

- VISIT TO LOCAL DAIRY — standards of cleanliness — story of Louis Pasteur—food values in milk (experiment with rats) — graphs and tables showing quantities of milk required for growing children — refrigeration — visit to the farm (dairy cattle and meat cattle)

- REGULAR VISIT TO NURSE when child is weighed and measured — classroom discussion of growth — children make charts of their own growth to be filled in at intervals throughout the school term — what can the child do now that he could not do a year ago, four years ago, eight years ago, etc. — discussion of when his growth began — when it will stop — what makes him grow — changes in his feelings about himself and others.

Topics dealt with in this manner will involve research in many subject areas and help to break down some of the artificial barriers we sometimes erect between different parts of the school program.

SUGGESTED TOPICS

PRIMARY LEVEL

Much of the instruction at this level will be incidental and the teacher must always be on the alert for the 'teachable moment'. There will be little health teaching as such — the instruction will grow out of daily experiences in the classroom. Some possible points of departure for discussion and the development of good health habits might be:

- dress
- grooming
- cleanliness
- brushing teeth
- care of the eyes
- rest and sleep
- eating habits
- safety
- babyhood and childhood
- growth.

JUNIOR LEVEL

At this stage the children are developing an interest in their own bodies and how they function. Any attempt to deal with the body should reduce technical language to a minimum, but should be based on accurate information. The facts should relate to habits already established and should lead to a better understanding of the reasons behind these habits. Function and care are more important than anatomical detail. Some suggestions follow:

- effects of fresh air, exercise and rest
- functions of bones and muscles
- functions of blood
- tooth decay
- the senses
- care of the skin
- basic daily food requirements
- prevention of accidents in school and outside
- dangers of smoking
- children in the family
- growth of the child.

EVALUATION

The accumulation of factual knowledge alone (the parts of a tooth, food rules, etc.) can never be regarded as indicative of a successful health program. The application of broad concepts and the development of healthy attitudes are of much more lasting value. It is simple to test a child's knowledge of food rules and the parts of a tooth. Teachers, however, must aim for a change in behaviour and attitude. It is much more difficult to assess the development of the child's attitudes. Some of the things which might be considered are:

- the child's general grooming from day to day
- the type of lunch he brings to school
- his relationship with his parents and friends
- his behaviour in the classroom, in the school yard, on the ice rink, in the gymnasium, on the street.

As in Physical Education, specific marks and grades become meaningless. A remark or comment on the child's report card or school record can better report progress and development.

ONTARIO DEPARTMENT OF EDUCATION

CURRICULUM P1, J1

INTERIM REVISION SCIENCE

1967

SCIENCE – INTERIM REVISION

This booklet is issued so that schools may continue to develop their science programs, pending the report of the Provincial Committee on Aims and Objectives. The interim revision presents new approaches to science and new resources which may serve to enrich programs in current use.

These interim courses are published for *study,* for *discussion,* and for *optional implementation* in part or as a whole.

In the development of this outline, invaluable assistance was received from many individuals and groups. Comments and suggestions will be welcomed; the revision of curricula is a continuing process.

CONTENTS

PREAMBLE 4

INTRODUCTION 6

COURSES
- First Year 8
- Second Year 10
- Third Year 13
- Fourth Year 15
- Fifth Year 17
- Sixth Year 19

THE CLASSROOM AS A WORKPLACE FOR SCIENCE 21

THE OUTDOOR LABORATORY 22

APPENDIX A
- New Resources from Curriculum Groups 23

APPENDIX B
- Case History in the Nuffield Junior Science Project 25

APPENDIX C
- Objectives 32

APPENDIX D
- Preliminary List of Source Materials for Teachers 33

PREAMBLE

This interim revision is intended to consolidate the good practice of the present day so as to pave the way toward future science programs. Some teachers have already adopted the proven practices of their colleagues and some have developed new approaches in intuitive fashion. Some have tested out the wealth of resources in methods and materials that have been produced by science groups in recent years. As well as being ready to teach science in new ways, teachers have been receptive to new thought in the whole field of education. In such a climate of change, this updated program is designed to prepare the way for further advances.

Although this interim revision may facilitate eventual major change in the teaching of science, its main purpose is to identify and record what shows most promise in current practice and thought.

As a preliminary step, the programs of study that had been developed in many localities of Ontario were examined. Visits were made to schools, and experiments in science curricula in Ontario and elsewhere were studied. The study revealed the strong features of present courses, and those units of newly developed experimental programs in which some topics were treated with new effectiveness. At this stage consultations were arranged with persons in schools, in colleges, in administrative positions, in science research groups, and in the wider community. Through criticism and advice, an approach to science was formulated which appeared productive and viable.

The timing for the development of a new approach proved fortunate, for many curriculum resources had been recently produced, and were becoming available. Most important, these new resources, listed in Appendix A, are compatible with one another, because they have many common characteristics. Further there is some agreement on approach.

First, there is agreement that every child learns best when real things, such as magnets, minnows, melons and mica, are at hand on which to base his inquiries. Books, films, radio, and television enhance, but cannot replace activities with real things.

Second, there is agreement that the experiences of the young child as he attempts to find things out are often more important than what he discovers. There are many ways of inquiring into the nature of things, and the more opportunity each child has of pursuing investigations in diverse ways, the richer his experience.

Third, there is general agreement that the learning of facts does not constitute an education in science. With the rapid expansion of knowledge, there is little hope of learning more than a small part of the information available. With the rapid changes in science and technology, there seems no certainty that any specific group of items of fact is essential to an education. What seems worth developing is some organization of knowledge, some conceptual scheme that appears reasonable to the child.

Two further premises underlie this updated approach to science: first, that the interests of individual children and groups of children should determine their activities in science as much as is feasible, and second, that the role of the teacher is to support with wise planning the child's endeavours to understand the nature of the world. For, if the child has an inner urge to discover things and a strong motivation to work at science, and if the teacher provides the framework for inquiry, a satisfactory program is possible.

A program designed to encourage free inquiry need not be disorganized. Without organization there might be unnecessary repetition and children might lose the chance to sample a diversity of topics. Each course has a simple plan in which a dozen or more topics are listed for each year. From these or others, some ten may be selected. The teacher, by his initial selections, plots the development of the science program according to the needs and interests of his class.

Once a topic has been chosen, a starting-point can be devised. Usually this is an idea, an event or an object. Suppose the topic 'Rain' has been chosen. Out in the rain some pupils might make measurements on the size of raindrop marks on the pavement. Later others might learn to record rainfall. Others might search meteorological records, compute averages, and make graphs. At times class instruction would be essential; at other times group work would be more fruitful. The investigation would broaden out freely according to the interests of the children. As the work progressed, the pupils would express their findings in words, numbers, graphs, sketches, or three-dimensional structures. In the whole venture, the pupil's initiative finds its complement in the teacher's support.

Normally the science program will vary from class to class. Indeed to some extent, each individual child will have his own program. Since it is agreed that the experiences during inquiry are of major importance, and that science should not be limited to any one specific body of knowledge, a diversity of activities and findings is guaranteed. Hence, the individual child and the individual teacher in the individual school are largely able to determine their own programs.

The resources needed to support a modern science program are increasing year by year. Many teachers improvise and develop their own stores of equipment. Groups of teachers and special committees ensure that new ideas and devices are known to their fellow teachers. Skilfully planned units, carefully thought out manuals and monographs, reference books, and packaged apparatus provide patterns for activities. These resources can give guidance and inspiration, without limiting the independence of the classroom teacher.

The science program in a school remains viable so long as children have opportunity for direct inquiry, independent study and creative activity. In seeking these three for each child, we should avoid the hazards of inflexible programs. When a course is designed by the teacher for the boys and girls actually in his trust, a maximum of satisfaction and achievement becomes possible.

How can these achievements be evaluated? Pupils, parents, and teachers are naturally concerned that there be satisfactory progress in science. Children wish to be assured that their performance lies in the direction of the goals that have been set. Their parents want evidence that their children are learning. The teacher wishes to measure how successful he is in achieving his hopes for his pupils.

The evaluation of learning is a continuous process. First, the children express their findings everyday. As their teachers watch the results of investigations, the sketches, the comments, the written work, and other evidence, an estimate of progress is possible. These products indicate to parent and teacher what is being learned.

Second, by observing the children at work, and by listening to them, their teacher can assess their skills. For example, he can find how well they are able to make careful observations and to make inferences.

If groups of pupils are engaged in a diversity of activities, uniform science examinations may prove impractical, and if, in any case, a teacher is sensitive to the development of each pupil, and to his accomplishments, there is limited need for formal term tests or annual examinations.

Detailed suggestions which might guide the updating of science programs of the early school years may be found elsewhere in this booklet. No attempt has been made, however, to produce definitive courses, since there is no certainty that any specific elements of science are essential in the education of school children who will be living into the next century. Nor is there certainty that any one prescription for the teaching of science will best serve the needs of all children, and the community in which they live. Rather, the opportunity is presented to incorporate some of the new resources in science into present school programs.

INTRODUCTION

'The school is, on my view, simply a point of vantage for the child in his efforts to understand the real world, and to adapt himself to it. It should be a place of shelter for him; but not in the sense that it shuts the larger world away from him. Its task is to bring the world to him, in ways, and at a pace fixed by his needs and interests.'

Susan Isaacs
(From '*Intellectual Growth in Young Children*')

1. Science in the school provides the child with an opportunity to explore the real world around, the world of technology as well as the world of nature. Already he has learned much, and at school he continues to ask questions and look for answers.

2. Little is excluded from his exploration, for the young child does not recognize traditional subject boundaries. Neither does he care that there is a body of organized knowledge and that learning can be sequential so that the understanding of one concept assists in the learning of another. The matter for inquiry consists of whatever interests him in the learning environment at the time – raccoons or rocks, candles or compasses, dandelions or dinosaurs.

3. The teacher can widen the child's interests by arranging for a stimulating school environment. The real world of the twentieth century is a joy to the child, and the school serves as a doorway to reality. Much of the world can be brought inside the walls of the school through books, magazines and newspapers, specimens, pictures, equipment and visual aids. More of the world remains outside, and the teacher who leads children into the world beyond classrooms walls provides a richer starting-place for science.

4. Science at school is science for children, not necessarily the conventional science of adults. With increasing knowledge of how children develop, it is becoming more nearly possible to suit education to the individual child at every age. Teachers no longer use the same methods with eleven-year-olds as with eight-year-olds. While most children over eleven are able to do abstract thinking with some facility, younger children think better when they are handling concrete materials. These children, in a sense, think with their hands. Most children under seven are still groping to understand the world around them, and probably in these early years the richest practical experiences should be arranged.

5. Through the years, children will have opportunities to practise the methods of science. These methods, and the attitudes of the scientist seem natural to young children as they explore their environment. Children are curious, they are observant, they ask questions, they seek answers in books and in practical activities, and they are critical of what they discover. Children, like scientists, must find things out in their own way.

6. This process of seeking answers, the process of inquiry, is the essence of science. The experiences of the child are more important than the product of these experiences. One could tell a boy that his shadow would be shortest at noon, and he would know it. But if another pupil traced out the boy's shadow on paper at nine o'clock, cut it out and repeated the procedure every hour till dismissal, and the whole array of cut-outs were fastened to a wall, questions would arise. The reason for the shortening and lengthening might be considered the product of the inquiry, but this product constitutes only a small part of the total experience. How pupils learn things is more important than the things they learn.

7. Younger children profit most when science is not treated as a separate subject, and even with older children it should not be treated in isolation.

8. The findings of the pupils represent much thought and effort. These products of inquiry, while not as important as the process of inquiry, are the bricks from which a structure is built. Facts themselves are of limited importance, but children are seldom satisfied until they have organized the facts into patterns. Because the child can find an orderliness in nature, his world becomes understandable. Year by year the child's concept of the world around him becomes more sophisticated. Eventually it resembles in some degree a scientist's conceptual scheme. This product of many inquiries has considerable importance.

9. Through a series of insights, a child slowly learns the nature of things. Ideally, he would choose his own starting-point for inquiry. In this syllabus certain items are proposed as 'starting-points' (see the example on pages 22-25). The teacher with his broad background, will have acquaintance with the organized knowledge that has accumulated about these items or topics. As he wishes the pupils to make their own discoveries, he will leave them free to make inquiry, giving encouragement, but only a minimum of direction. Using materials, apparatus, books, and audio-visual devices they will form their own ideas. Little by little, they will develop a degree of understanding of the fragment of the universe they study. Each child adds to what he already knows, and clearly each child may achieve a different degree of understanding.

10. The teacher's intention is to encourage each child to find out what he can. In doing this he should not set any limit on what the individual child may achieve. From a starting-point, the child can progress as far as time, resources, and interest allow; to ensure this a precise definition of content is avoided in the syllabus.

11. At times children may be encouraged to find things out very much on their own, with little guidance. At other times more definite procedures will be recommended by the teacher to guide them toward their discoveries.

12. A major role of the teacher is to arrange for working-time, to provide a stimulating environment, to let children ask their own questions, to encourage them to experiment in small groups or individually until answers are found that satisfy them. The teacher's role is more to guide than to direct.

13. When a pupil has discovered something, he will usually want to communicate his findings. The teacher's role at this stage is to provide a diversity of materials, so that each pupil will choose the medium that will express his discovery in a satisfying way. Sometimes he will prefer to use the written word, sometimes the spoken word. He may choose to paint pictures or build structures at a bench. On occasion he will make graphs and express his findings with numbers. This creative activity is the tangible product of direct inquiry and independent study. His creations are the evidence of his exploration of the real world.

    Since these creations are his representation of the world as he sees it, the teacher will not expect complete accuracy in sketches and graphs, or faultless written work. Rather he will look for a child's honest expression of his own activities, up to his competence.

14. Although the syllabus suggests themes that might be chosen in successive years, the arrangement of times and topics is open to much modification. If a teacher finds a continuing interest in a topic such as "Space vehicles", he might encourage study of the same topic year after year at levels of increased sophistication. Further when a teacher knows the individual members of a school community well, he can devise sequences of activities in which the increased difficulty matches the increased abilities of the children. Thus a teacher may plan that some topics in the curriculum recur annually, even though the topics are not repeated in the printed syllabus. What matters is that a teacher continues month by month to provide rich and stimulating surroundings so that each child may have a unique experience as he finds patterns in things and events.

COURSES

‘OBSERVING FAMILIAR THINGS’ – FIRST YEAR

The years when the child is beginning school life are years different in many ways from the later ones. During these early years, the community is ready to grant him the privilege of living as a child. Teachers expect him to think as a child, not as a small youth nor as an immature adult.

The pre-school child has learned much already. Relatively he has learned more in a shorter time than he ever will do again. He has done it by eagerly exploring his environment.

His curiosity remains the starting-point for science in its widest sense, and the school allows him to continue this process in a more organized way. It should provide places and things to be explored, materials for making things, opportunities for planning, and even the chance to learn from mistakes. It should provide time for observing things, time for enjoying new sensations, time for conversation with other children and adults, time for tinkering and even ‘time to stand and stare’. In short, the experiences provided must be adequate, unrushed, and, above all, enjoyable.

SYLLABUS

To the child, the things around him form a new world. Some things in the world he has already observed many times, and these familiar things of the kitchen, the house, the yard, the street, and the school he will meet again and again. It is this nearby segment of the world that forms the first vehicle for science. The many familiar things that can be readily procured form starting-points for activities.

Each class can make its own list of familiar things. Some items will be included because children have asked questions about them. Some will be added because the teacher foresees interesting activities linked with specific real things, such as a study of the shape, function, and properties of a float. Some will be the articles found on the short trips in the school grounds, on nearby streets, and in parks. Some items may originate in other subject areas, such as social studies and mathematics. Some may be part and parcel of an integrated program.

These familiar things are the starting points, from which questions can arise which in turn will lead to activities. The finding-out activities comprise the science program. Here is part of a list compiled in one classroom:

Alarm clocks
Apples
Aquaria
Asparagus
Asphalt
Balls
Beans
Bicycles
Bird-feeders
Bolts
Bottles
Bouquets
Bread
Bricks
Buds
Butter
Cages
Candles
Carpets
Carrots
Cats
Chairs
Cheese
Cloth
Concrete
Corn
Crocuses
Crockery
Dishes
Dogs
Eggs
Eggbeaters
Elastic
Evergreens
Flashlights
Floats
Flours
Foodstuffs
Forks
Fruits
Funnels
Furs
Gadgets
Garden produce
Glue
Goldfish
Hamsters
Hinges
Hotplates
Houseplants
Ice
Ice cream
Jelly moulds
Kitchenware
Kites
Ladles
Lenses
Levels
Locks
Lumber
Magnets
Meatgrinder
Metals
Milk
Minnows
Mirrors
Nails
Narcissus

THE INTEGRATED PROGRAM

In some schools, science is included in an integrated program. Such integrated programs are a natural fusion of several subject areas. In classrooms adopting such a program, children have excellent opportunities ‘to observe familiar things’.

For example, suppose a class has visited a firehall. The occasion embraces experience in language, art, social studies, and mathematics, as well as science. Where an integrated approach has been used, one might find children building a fire station using blocks, controlling the water running through a garden hose by means of a tap, making paper cut-outs of a fireman's clothing, playing out the activities at a fire or suggesting experiences to be written on experience charts. No boundary can be found between science and the other subjects.

SCIENCE BEYOND THE CLASSROOM

Frequent visits to the world around the school are essential. To provide some framework for such visits, one special area for field work is proposed for each school year. The area close to the school is suggested as the logical place for the pupils of this age.

Familiar things that are encountered on visits to places in the school grounds, in nearby streets, parks and establishments, might form part of a list. If the area is completely built up, man-made structures and machines can be observed. Such abundant materials as bricks and mortar show great differences to the eye and hand. But science is not limited to inanimate things. Even in downtown areas, many plants and animals may be found. Ventures into the world outside the classroom are often the most productive starting-points.

SUGGESTIONS

1. As much as possible, let the work follow the interests of the pupils. Children work best at self-appointed tasks (See the example in Appendix B).

2. As many senses as possible should be used.

3. As many similar situations as possible should be devised. For example, rather than examine one type of flour he should see several, and make observations on several.

4. At first, pupils should handle the materials without being given directions. Pupils are more creative and venturesome if given time to tinker while they find things out for themselves. Time, much greater in amount than is commonly allowed, should be devoted to free and unguided exploratory work. The teacher's role *in this phase* is to move from group to group, being helpful but refraining from prompting or directing.

5. Listening to children is essential. The teacher who listens to their questions and statements is able to assist them to gain understanding.

6. If necessary, provide suggestions that will allow pupils to explore aspects that may lead to interesting discoveries. Language, including conversation with adults, clarifies the child's experience and points the way ahead. Plan to have time for discussion.

7. In this syllabus, the 'familiar thing' being observed is the starting-point for an inquiry that will lead eventually to scientific concepts. But the emergence of concepts should be a natural process extending over many years. Teachers should neither give too much help nor urge conceptualization unduly, lest inquiry become stifled.

8. Children should represent their observations as freely as possible. What they have observed can be put in some external form, such as a drawing, a painting, or a model; or it can be expressed in conversation, writing, action, or song. Doing so, pupils experience their findings a second time in a new form. (Keeping a notebook is not recommended in the early years. Class scrapbooks make a more suitable record.)

9. The development from each starting-point can be expected to be different for each class. Therefore, no attempt is made here to suggest the science that may emerge from the various items.

In one school, each child was asked to bring a bottle, and a large collection of bottles of all sizes, colours, and shapes was soon assembled. The children, filled some with water, and poured the water from one bottle to another. Many questions arose:

Which holds the most?
Which is shortest?
Where do the bubbles come from?
Why does everything look wavy through them?
What makes the 'pop' when the cork comes out?

These questions led to some original activities. One pupil used the smallest bottle as a unit of height and found that the tallest bottle was seven times as high. Others filled a larger bottle with water and poured the water into a smaller bottle to see how much bigger the first one was. Some found out that it was quite difficult to pour water into a bottle with a narrow neck, and to pour the water out again. Sometimes answers were found. Sometimes the answers waited for another day.

'EXPLORING THE CHANGING ENVIRONMENT' – SECOND YEAR

Some familiar things, such as flour and flashlights, remain unchanged over a long time. Others, such as dandelions and dew, change in a short time. The program in the second year is built around those things which are different at different times. It is a study of events.

In this course the young child has the opportunity to explore his environment from day to day as the seasons change. Some events, such as the disappearance of frost in sunlight, take only a few minutes. Others, such as the development of the buds, take months. To the teacher this is not new. He can predict many events of the year. But the changing year is a novelty to children of this age. Many observations, many questions, many activities, and some answers follow its study.

The basic theme of seasonal change should not be interpreted in a narrow and restrictive sense. The syllabus must be a flexible one. Among the events of the year will be many events not linked with the seasons, and having little to do with weather, animals and plants. For example, power lines may be newly strung near the school. This event may foster a beginning in a study of electricity. If the smoke of burning leaves fills the air in the autumn, a beginning in the study of combustion is desirable.

Most of the topics in the syllabus are closely related to the biological sciences. However, for the study of the events of the year, the physical sciences also are involved. For example, the inquiry into the problem, 'Where is dew formed?', provides activity and insight into several fields. On a trip outside, pupils may find that dew is formed on grass, but not on sidewalks, in the shade, but not in sunlight. This may lead to further questions, 'When is dew formed?' and 'Why does it form?' all leading to concepts of a water cycle, and of changes in temperature.

SYLLABUS

Pupils should have some share in choosing topics for their study. From the hundreds of events of the year, the teacher and class will be able to make a selection of topics. Activities can then be planned. Naturally the selection of one class will be somewhat different from the selection made by other pupils. Therefore, any list in a printed syllabus should be regarded as suggestive, not prescriptive.

The problems listed can be starting-points for inquiry, and are not in themselves the questions that pupils will ask. For example, the problem 'How fast does grass grow in spring?', can best be answered by outdoor work involving measurement of grass in selected spots from day to day. If differences in the rate of growth are observed, the question 'Why?' will follow.

Lists of suggested problems make up this syllabus. Those listed are sample problems from which a selection may be made; different ones might be devised with any class. The teacher's task is twofold: to ensure a wide selection of problems, and to encourage direct inquiry in solving them.

LATE SUMMER

Where are the warm spots outside the school?
What are the tallest flowers near the school (or what are the tallest farm crops)?
What flowers last longest in water?
Which wild flowers have the most seeds?
Where is dew found?
How many birds can be seen near the school at this season?
Which trees change colour first?
What changes does one's shadow have during a day?
How long is one's shadow at noon in late September?
How is one of the local farm crops harvested?

AUTUMN

What garden plants have leaves that freeze first?
What garden plants have leaves that freeze last?
What colours are found in tree leaves?
How long does it take till all the leaves have fallen from a tree?
What birds come to feeders in the fall?
How is the classroom heated?

How does the temperature outside change from day to day?
How does the length of one's shadow change from month to month?
When does the first snowflake fall?
What animals are still around outside after the first snowfall?
How do puddles freeze?
What happens to bulbs in the weeks after they are planted?
What happens to apples that are stored in a place that is not cool?
What changes take place in potatoes that are left in a warm room?

WINTER

How do icicles form?
Are twigs alive in winter?
What frozen plants can be gathered in winter?
What tracks are visible in the school yard?
Which is the shortest day of the year?
Why are storm windows used in winter?
Why do some people prefer pine trees as Christmas trees?
How do Christmas tree lights work?
How deep are drifts after a snowstorm?
Does the depth of snow change from day to day?
Under the snow, what is alive?
How wet is snow?
How do people prepare for winter?
How do farm animals survive the winter?
What kind of snow is best for skiing?
How does a sleigh work?
What kind of ice is best for skating?
When do the buds of poplars begin to swell?

SPRING

Where does one find the last snow?
What are signs of spring?
What birds arrive early?
When do birds sing most?
How long is one's shadow in late March?
What seedlings grow quickest in flats and gardens?
How are young farm animals different from older ones?
When are toad tadpoles first seen?
How fast does grass grow in spring?
How many small animals can you find in a quarter of an hour?
How does a farmer cultivate a garden or a field?
Why does a gardener pull weeds from a flower bed?
How does the temperature change during a day?
What animals live in shallow puddles?
When do trees leaf out?
What plants flower early in the spring?
Of what use are curbs and gutters along streets?
When does most water run off in the spring?
What animal calls and other sounds can one hear outside the school?

EARLY SUMMER

Does it get dark at the same time every night?
Where do birds, such as robins, build their nests?
How rapidly do young toads grow?
In what ways are young trees different from older ones?
At what rate do farm crop seedlings grow?
What changes take place as grass is harvested to form hay?
How can one tell if the wind is blowing?
What does a wind vane show?
What animals do you find underground when you dig?
How long is one's shadow in late June?
Where are the cool areas outside the school?

FIELD AREA

Since the program in this grade is so closely linked to nature study, a great many of the observations will be made out-of-doors near the school. To collect information, frequent field work will be essential. Sometimes the whole class, and at other times a small committee, or a single pupil can gather the data.

Further, special field work is proposed for children of this age – a carefully planned visit to a farm. A visit at any season will give insight into rural activities. Conversely, it is usually possible for rural children to make a visit to a town to observe the characteristics of the built-up areas.

SUGGESTIONS

Many of the suggestions for the development of the First Year apply to the theme 'Exploring the Changing Environment.'

1. Observation and description of events can be recorded in many ways. Some teachers encourage a day-to-day class record, rather than individual notes in books.

2. Much information can be recorded in graphical form. Depth of snow, for example, can be represented by strips of paper, by broken straws or by lengths of string.

3. Wherever possible, mathematics, science and social studies, and literature should be linked.

4. Many children will now be able to read reference books. Provide a choice of books so that a child can find the help he needs.

5. Children in this age are not mature enough to stick to any topic for a long time. Pace the problem-solving according to the interests of the pupils.

6. As children develop different interests in their environment, devise ways by which they can work best. Some children at some times prefer to work alone; at other times they may work with another

pupil or in small groups. In pursuing problems, diversity of grouping is usually possible.

7. Measure the success of the science program by what the individual child does every day. The teacher who listens to the young child and who watches him make inquiry will have no need to apply testing procedures.

8. Where few farms are within visiting distance of the school, teachers could adapt the program. In communities where one large industry predominates, such as the production of pulp and paper, the activities of this industry throughout the year could replace the farm-based items.

9. Many of the children will be writing with difficulty. The formation of letters and spelling of words should be a matter of less concern than the ideas that are put on paper.

10. Many activities will start out-of-doors and be continued in the classroom where pupils can work more effectively.

In one school, the teacher asked: ‘What tracks can you find in the school yard today?’ This led far. First, each child went outside to examine the animal tracks; many became interested in their own tracks. Back in the school, a search began for books that would contain sketches of the snow-tracks of mice and cottontails. Pictures and paper cutouts were produced of the tracks of the wild animals, and dog tracks were later found in abundance. Several children began to record their own footprints. Some traced the shape of their shoes on cardboard; some attempted to chalk the soles so that a coloured print could be made on construction paper. One who remembered an incident from ‘Robinson Crusoe’ was delighted with the print of his bare foot in the wet sand. One boy, who had little interest in the snow prints of sparrows and mice, found that tire-prints had individuality. At home, he learned to recognize those who had made visits, through the marks that were left in the snow by their automobiles.

'INQUIRY INTO THE WORLD AROUND' – THIRD YEAR

To pursue one topic over a longer period of time, and to adhere to a study of interrelated ideas become possible as a child grows older. It will be noted that the syllabus comprises a smaller number of topics than in earlier years.

Topics can be studied more intensively, in part because of the pupil's greater ability to use the resources of printed materials, and in part because of his greater ability to express himself through mathematics and language.

Each topic has its starting-point, a point where the child meets a specific part of the world around him. The teacher's job at the start is to supply surroundings rich in materials and to arrange plenty of opportunities for experience. This may mean taking the children to a row of trees, or bringing magnets and dozens of metal objects into the classroom. For real learning, children must have a great breadth and multiplicity of practical experiences.

Pupils will need time to ask their own questions, to handle the materials, to probe and pry, and talk over what they observe. They will need time to record data, and to gather further ideas from books. Books may suggest fresh techniques and new ways of working. Encouraged by the teacher, each child takes his own part in the process of inquiry.

As the pupil or groups of pupils find out things, there will likely be much discussion. Interpretations will be placed on what was observed, and what was done. Pupils will be looking for patterns in nature. Some of these patterns can be expressed in graphical form and some in numbers and words. Science patterns will be expressed in paper, paint, clay and wood. As pupils discover and portray patterns, they are gaining experience in *organization* – an experience that would be denied them if the organization had already been done for them in the printed or spoken word.

When children in this grade pursue their inquiries, they will probably also find out things in fields other than science. The interrelation between science and mathematics, language, the arts and the other humanities, strengthens learning, and so deserves encouragement. For example, if a child investigating a woodlot unearths a century-old, hand-shaped glass bottle, the teacher would not reject the discovery. He would let the child trace out the origin of the bottle, and encourage him to search out information about the early settlers and their food and drink. Because the teacher is granting the pupil freedom of inquiry he must be ready to accept a breadth of discovery that leads from science into other fields. However, because the starting-points for inquiry are based in Science, much of the discovery will be within that discipline.

SYLLABUS

The following topics are starting-points. The teacher and pupils may extend the studies as desired, may substitute topics of current local importance in place of the suggested ones, and may place the topics in any desired order. Ten topics, or even a smaller number might constitute a year's work, depending on the breadth and depth of each inquiry.

The Woodland

A forest or woodlot is the special field area for extensive outdoor work in this grade. If no natural grove can be visited, pupils might use the trees in a park, trees along an avenue or even a single tree. Much information of descriptive and quantitative nature can result from an outdoor study. Pupils working in groups of various sizes can investigate the tree cover, the animal community living in and under the trees, the soil, and the animals living underground. Woodland field work is rewarding at all seasons of the year.

Variation

The concept that no two individuals are identical can be developed after many practical studies. For example, leaf length can be measured, the number of beans in a pod counted, the number of florets on a chicory head tallied and even the frequency of galls on golden rod plants assessed. Tables, bar graphs and other mathematical expressions are essential in the study.

Bird Life

One species, such as a chicken, redwing, or English sparrow, could be selected for a case study in which the bird would be observed as closely as possible. Alternatively, groups could observe different birds, each studying one species.

Water Drops

As an introduction to the properties of water, several problems can be investigated experimentally. For example, are all drops from a dropper the same size? Do drops on metal foil, waxpaper and glass spread equally? Does water heap differently in a tumbler than other liquids? Is there any pattern in the times taken for water to empty from pop bottles of various size? How high does water rise when a blotter is dipped in it?

Comparing Animals

Animals such as goldfish, a toad, and a cat might be observed in pairs, so as to discover the similarities and the differences. The comparison might be extended to smaller animals which could be examined by individual pupils or groups. (See OISE unit 'Comparing Animals')

Thermometers

Many thermometers will be needed so that the pupils can see the readings easily. Because Centigrade thermometers are graduated in single degrees they are easy to use. Pupils can look for patterns in the changing outdoor temperatures during a day, in the warming of cold water, the cooling of hot water, and the melting of snow.

The Moon

In any month, the moon is present in daytime sky. Pupils might record the time of the observation, the location of the moon and its appearance. Reports in newspapers and periodicals of the findings of moon probes provide further information, and might lead to a study of space vehicles and discoveries in astronomy.

Classification

Classification involves grouping objects into sets and then further dividing each set into sub-sets and so on. Pupils can discover that more than one classification is valid. Geometrical shapes, mixtures of screws and nails, breakfast foods and other materials can be grouped. Keys can be developed. Pupils should be able to use and make simple keys that include only a few items with clearly distinctive characteristics.

Seed Growth

Seeds of flowers, seeds of garden produce, seeds of weeds, and seeds of field crops germinate readily in flats. Pupils will likely set problems for themselves such as, 'Which seeds sprout first? Does every seed grow? How fast do seedlings grow? What happens when a seed is planted upside down?' Topics like this lend themselves to independent inquiry, rather than to 'set lessons'.

Compasses

Pupil experiments with compasses outdoors and in the classroom can lead to concepts of the magnetism of the earth.

Comparing Plants

Pairs of different flowering plants might be observed so that similarities and differences could be listed. Pupils should seek out their own descriptive words suited to the roots, stems, leaves, and flowers. For convenience, much investigation can be made outdoors.

Rain

The observation of raindrops, measurement of rainfall, and investigation of what happens to rainwater may lead to concepts of the water cycle.

SUGGESTIONS

1. The syllabus is brief. It proposes starting-points. Pupils are encouraged to make inquiry in whatever direction they find fruitful, subject to the consideration of safety.

2. Since measurement is required for most topics, it should be introduced whenever the need arises. First, children may use arbitrary units, measuring length with a paper clip or a handspan. Conventional units should next be adopted. Since children find metric units more convenient than others, and since the metric system is becoming more generally used, teachers may wish to introduce this system. For measuring length, only the metre, centimetre, and millimetre are needed.

3. The selected topics may be investigated in any order. In some cases new inquiries may be undertaken by some students while others are completing earlier enterprises.

4. Each child should be encouraged to develop skills through work on projects of his own choosing. Projects requiring on a high degree of skill in classification, such as leaf collection, are of limited value.

5. Since individual pupils may be inquiring into different aspects of a topic, teachers may find a flow chart such as that on page 23 helpful in keeping a comprehensive record of progress.

6. Modern technology provides tools for recording sight and sound. Encourage children to use cameras in class, and on field trips. Tape-recorders are useful in preparing presentations and reports.

7. A large work bench is almost essential for many kinds of creative activity.

8. Children should be encouraged to make predictions once a pattern for a phenomenon is clear, since 'the immediate purpose of scientific thought is to make correct predictions of events in nature.' As an example, in the topic 'Temperature' the outdoor temperature at noon might be predicted after observing the nine o'clock reading. A study of events that have happened in the past often makes it possible to predict events of the future.

'SEEKING THE NATURE OF THINGS' – FOURTH YEAR

The work for this year is largely a continuation of the previous theme, 'Inquiring into the World Around.' As in earlier years, the development of the science program lies in the hands of the teacher in each individual room. He determines the sequence of topics that will best suit his community, based on the syllabus that follows.

SYLLABUS

This syllabus lists several topics to which others might be added. Probably eight or ten topics might be chosen for the year.

Fruits

A study of some fruits of common plants, such as the grape, tomato, pumpkin, wintergreen, cranberry, oak, sunflower, milkweed, and oats will be convenient in autumn. A special search may be made for the fruits forming along a fencerow or in any other habitat that has been chosen for the ecological study.

Common Fish

Pupils may base their studies on small native fish, such as catfish or shiners, that may be observed in aquaria, or on such larger fish as might be secured from a fish store.

Light

Pupils can have practical experiences that may lead to concepts of light as something that travels in straight lines, that may be reflected, that may be absorbed, that may be refracted, that may be divided into colours, and so forth.

Using the Microscope

As the pupil is introduced to the microscopic world, he discovers that the familiar materials, shapes, and surfaces of his environment are frequently composed of smaller units such as fibres, crystals, cells, and so on. Cloth, paper, seeds, sand, soil, salt, moulds, pollen, insect wings, algae, pond life, and anything else pupils bring should be examined through their microscopes. (See OISE unit 'Microscopy'.)

Snow

Since snow on the ground changes from day to day, a continuing field study is possible. The depth of snow layers, temperatures, dampness, texture, penetrability, and other features may be observed by small groups of boys and girls.

Crystals

Children might 'grow' crystals of salt, examine crystals that have developed in rocks, and study such minerals in rocks as feldspar and mica. This topic, with its references to surfaces, edges, corners, and to symmetry links with mathematics.

Insect Behaviour

Mealworms, the larvae of certain grain beetles, are easily reared and fed. To observe these animals and to experiment with them is not difficult. Other insects might be studied instead.

The Burning of a Candle

In studying this phenomenon, groups of pupils might pursue different aspects. Some might study sources of light, others types of fuel, and others combustion and the composition of air. Still others might experiment by burning candles of different size and number in jars of different volume and shape, thereby gaining an insight into 'variables' in an experiment.

Fossils

Local shales and limestones contain fossils which provide a starting-point for study of living things in the past. Museums hold many dinosaur bones of Canadian origin. This topic might lead to a search for reasons why some animals become extinct.

Weight and Matter

Using arbitrary units of weight and volume, the child might investigate such common materials as plasticine, limestone, and iron. The concept of density may be recognized intuitively. (See OISE units 'Matter' and 'Measurement')

Birds and Adaptations

This topic leads to research into adaptations for flight, for survival in winter, for securing food, and for escaping enemies.

The Fencerow Community

A fencerow, grassland, pasture, or even a lawn makes an excellent outdoor laboratory area. Pupils may map the section being studied. In small groups they may measure the population of plants and animals. The kind of soil and subsoil, its temperature and dampness can be noted. Individual pupils may become interested in specialized studies such as the living things under stones, or in stumps.

SUGGESTIONS

1. Children seeking to discover the nature of things should be encouraged to use all the resources they can find. The classroom can function as a laboratory, a library, a study, a workshop, a viewing centre, a discussion hall and a rendezvous for work outside school walls.

2. Outdoor work in the selected field area could extend over a large portion of the year. If a pasture, fencerow or other dry open habitat is not available, a vacant lot or a grassy area at a school might be a suitable location for work.

3. In field work, only the more common living things need be named. The emphasis is on observations and relationships, not taxonomy.

4. Most teachers use a diversity of methods in their teaching. Sometimes teachers encourage open inquiry for which only a starting-point is provided. This is most challenging, because the child must discover a problem, devise a method, and come to findings. Sometimes the topic and problem are given, and the rest is left to the pupil. When the process of discovery is guided more closely, the teacher may choose the topic, the problem, and the method; the pupil then makes the observations that lead to such interpretations and conclusions as seem warranted.

5. Teachers should fit the program to their own schools. The choice of topics depends on the interests of the children, the interests of the teacher, the availability of materials, and the opportunities for useful inquiry.

'SCIENCE SERVING MAN' – FIFTH YEAR

The main theme for the year is that science serves mankind. The ideas that spring from the scientist's search often prove useful in daily life. They help man to cope with the world around him.

The pursuit of science and its application are both creative ventures. In the pursuit of science the scientist attempts to discover the nature of things. He hopes to find some pattern that will describe what he observes. He may call this pattern a concept, a theory, or a principle. These generalizations in science clarify in the mind of man some aspects of the very complex world. The concepts last until some other scientist produces better explanations.

The inventor is the person who creates some new device or some new process for industry. Sometimes he is an artisan, sometimes an engineer, and sometimes a scientist. His invention remains in use until a better product displaces it. Some developments, such as the design of the plow and the domestication of the cow, are ancient, but still important. Others such as the tinderbox are obsolete. But every year new creations of technology are devised in great numbers.

SYLLABUS

Some selection of topics will be necessary; *ten or fewer would be adequate for a year's work.* Topics based on local applications of science and on local industries might be substituted for any listed below.

Man's Use of Water

Especially in metropolitan and larger urban areas, a network of watermains and sewers is necessary. A detailed study of a local water supply might lead back to many operations such as pumping, filtration, purification, storage, and distribution, and to the science underlying these processes.

Wetlands

The year's field area might be a lowland, marsh, or even the edge of a shallow pond. Bogs and deep ponds should be avoided, in the interest of pupil safety. A survey of the plants, animals, and soil might lead in many directions: to the economic uses of wetlands, to the understanding of succession of communities such as the lake-pond-marsh-meadow transition, or to an appreciation of natural resources.

Soil

The upper soil layers, and the associated plants and animals could be examined first. The relation of top soil to farming could be investigated. Pupils might dig a soil pit to observe the soil profile. The importance of the conservation of top soil is apparent when pupils learn how slowly the parent soil changes to subsoil, and the subsoil to topsoil.

Musical Instruments

A practical investigation of the ways in which sounds are produced may be based on examination of various instruments, from harmonicas to pianos. Some pupils may wish to make shepherd's pipes or stringed instruments.

Winter and Man

Pupils might make a practical survey of the effects of winter on the activities of man, and on the world around him. Man has developed technological devices, some to ensure his survival in the cold season, and some to exploit the advantages that winter brings.

The Bicycle, a Creation of Technology

By examining and dismantling a bicycle, pupils may see how the inventor has relied on science, and how artisans have used their skills. Such items as lubrication, air pressure, cogwheels, chrome plate, springs, and chains could be investigated. (In place of a bicycle, a farm implement or a household gadget could be studied.)

Forecasting Weather

The setting up of instruments, the recording of observations and a description of the current weather is a fine pupil activity. Pupils should refer to records from nearby meteorological stations, but they should realize that their own readings will be somewhat different, if only because the localities are different. Relationship between readings and weather may lead to attempts at forecasting. To forecast weather for even an hour ahead is worthwhile.

Space Travel

Blast-off, trajectory, and re-entry of space vehicles may be simulated with balloons, corkguns and handkerchief parachutes. Pupils should see that the principles underlying the motion of space vehicles have long been a part of daily life, but that the successful operation of the vehicles depends on recent advances in technology.

Domestic Animals

Individual pupils might select one species, such as a cow, horse, dog, hamster, chicken, or duck. The manner of growth of the animal, its characteristics, its wild relatives, and its usefulness could be subjects for inquiry.

Cells and Circuits

Cells, bulbs, switches, electromagnets, buzzers, and other objects can be connected in many ways. Concepts of conduction, insulation, heating effect of an electric current, and magnetic effects may be developed. Some pupils may wish to link Volta, Henry and Edison with their inventions.

The Growth of Plants

The way in which plant stems increase in height and in girth varies with the species. Maples, pines, oats, and beans could serve as examples. A graphical record of the lengthening of the new growth of maples or pines, or a similar treatment of young plants of oats and beans, might reveal interesting growth patterns. Controlled experiments with different conditions of soil, light, water and temperature would lead to the concept of the dependence of living things on environmental conditions.

Insects and Man

Any insect with a local economic importance might receive first study. The tent caterpillar, spruce bud-worm, wasp, black fly, mosquito, and bumble-bee are examples. Since the environment influences its chances of survival, pupils might observe the place in which the insect lives, and also investigate its food, its enemies, and the effect of weather.

Aircraft

Modern aircraft are complex products of modern technology. With the aid of models pupils might begin a study of the theory of flight, the devices for control, and the provision for passenger safety and comfort.

Management of Natural Resources

Conservation is sometimes defined as the wise use of natural resources. Since the topic is extensive, pupils or groups of pupils might choose areas for study such as soil, streams, lakes, wetlands, air, forests, other plant life, and animal life.

SUGGESTIONS

1. Through clippings from newspapers and magazines, news of the most recent applications of science and developments of technology can be brought into the classroom.

2. If tools and scrap materials are available, children can have the opportunity to make models, mock-ups, and simple devices in the classroom.

3. As in earlier years, the topics form starting-points. The activities of pupils and groups of pupils may lead in several directions as shown in the case history chart on page 23. In one class that began a study of 'Space Travel', three projects developed. One group built large models of planets from Styrofoam, another constructed a planetarium dome for use with a commercial star projector, and another group designed a diorama that showed the lunar landscape.

4. Social studies and science could be linked in many ways. For example, the domestication of the horse greatly affected man's way of life.

5. Each topic chosen represents a starting-point for inquiry. No broad survey of the topic is necessary. Only those aspects that seem promising need be studied.

'RECOGNIZING FUNDAMENTAL IDEAS' – SIXTH YEAR

As in earlier years, boys and girls will be making their own observations of the world around them. But science does not stop at observations. Pupils will measure, classify, and interpret what they observe. Eventually they will form generalizations. The generalizations will be directly related to the observations. For example, pupils with a microscope may observe cells in the tissue torn off from the upper side of a leaf and cells in the thin film between the layers of an onion. The simple generalization might be, 'Some plants contain cells.'

Teachers, with their greater background, would recognize that the pupil is discovering one of the fundamental ideas of biology, that the cell is the unit of structure in plants and anmials. This fundamental concept is much more significant than the simple generalization based on the limited evidence. The teacher should alert the class to the important ideas as they are encountered.

Thus, teachers have dual responsibility. First, they should encourage inquiry because it gives experience to the pupils, no matter whether partial or more developed concepts emerge.

Second, they should especially encourage those aspects of inquiry that seem to lead to major concepts.

SYLLABUS

The year's work may be based on the topics listed below, or on others of special local importance. *Ten topics, or fewer, might be selected.*

Case Study of a Tree

Groups of pupils could select different common trees for a long-term study, such as an aspen, a willow, or a lilac bush. The tree would serve as an example of the functioning of a living organism.

The Stream Community

A shallow, wadable brook or creek makes a safe starting-point for an ecological investigation. With sieves, minnow-traps, or hand-held seines, aquatic animals can be caught, and then can be counted and observed closely. The structure of the stream bed and the characteristics of the flowing water could be investigated. The trees, shrubs, and other plants near the stream, the aquatic plants, and the birds, mammals, and other animals living in the surroundings are all part of the stream community. Pupils will find evidence supporting the ideas of fitness for environment, and of interdependence of living things.

Pendulums

Here much practical work is possible because swinging things are common in the child's surroundings. Experiments with suspended pebbles, long sticks and articles of other shapes may lead to data expressed in tables, graphs and words. Fundamental ideas of conservation of energy may emerge.

Origin of Rocks

Local rock structures, or pebbles in brooks and in soil could be examined. A study of sandstone or shale forms an excellent vehicle for underlining the principle enunciated by James Hutton, that events in past geologic history were like events of the present day.

Carbon Dioxide

This is an excellent gas to study because it is comparatively safe and readily produced from vinegar and soda. Pupils may perform experiments to find its relative density, interaction with water, and inability to support burning. The idea of chemical change could emerge.

The Sky at Night

Observation of some constellations, of the planets Venus, Mars, Jupiter and Saturn, and of meteors, may lead to concepts of the earth's motions and of relative distances of celestial objects.

Food Spoilage and Food Preservation

The souring of milk, the fermentation of apple juice, and the growth of moulds make a good introduction to small organisms and to concepts of nutrition in non-green plants.

Machines

Pulleys and levers are machines that lend themselves to practical exercises giving numerical results. Spring balances will prove useful for measuring the force used on the machine.

The Covering of Animals

An examination of the scales of a fish, the skin of toads, snakes, poultry, and mammalian pets, and of the coverings of invertebrates should document any discussion of maintenance of normal body temperature, and of protective colour.

Energy and Work

These quite abstract concepts gain meaning when associated with many concrete examples. Simple apparatus, such as a ball rolling down a trough, or the rebounding of a dropped 'high bounce' ball can be used to illustrate the conversion of energy.

Field Crops

Pupils may select one species of plant, find how it is grown, and from a specimen determine the structure of the root, leaves, stem, and flower. A case study of a cash crop could include its marketing and consumption, so that boys and girls might see links between science and economics.

The Atmosphere

From experiences with tires, barometers, and balloons, pupils can develop such concepts as weight of air, pressure, and the changes in volume accompanying changes in temperature and pressure. The inquiry may lead to a search into the causes of air pollution, to library investigation into the character of the upper atmosphere or to some practical tests for finding the best air pressure for bicycle tires.

THE CLASSROOM AS A WORKPLACE FOR SCIENCE

During the time for science, the classroom becomes the indoor workplace, that is, the laboratory. A steady hum and bustle mark this room where pupils are planning work, assembling equipment, discussing results, and producing booklets, charts and models.

If the teacher decides that facilities should be flexible so that the pupils may work at times in small groups, at times as a whole class, and even at times alone, there is little need for fixed furniture. While there should be at least one large sturdy table somewhere in the room, most of the work will be done at smaller tables, or on two or more desks pushed together. Since pupils will learn by direct personal experience, there is little need for a teacher's permanent demonstration desk. However, a long, low, firm table will have many uses, ranging from a display space for projects to a general workbench.

Pupils will need to handle hammers and saws, and to use tinsnips and pliers. Therefore, a regular workbench with a vise, and a set of simple tools is almost essential. A storage place for lumber, plywood, metal, glass, wire, cloth, paper, cardboard, paints, varnishes, and a diversity of scrap items will keep at hand the wealth of materials that the boys and girls need as they express their ideas.

Running water and sinks are already common in classrooms. Some schools have found that an electric stove, complete with oven, proves a most adaptable source of heat. Others use electric hot plates, gas burners, or candles. For the beginnings of science, it appears that the kind of equipment found at home in the kitchen serves the pupil well at school.

While simple household materials such as kettles, pots, bottles, and saucepans will likely form a large part of the equipment, some scientific apparatus should be purchased in quantity. Magnets and compasses, test tubes and beakers, magnifiers and microscopes, are examples of items that will be much used by many pupils. As a general rule, materials that pupils will use should be secured before materials that can be used only by the teacher.

Since science in the primary and junior divisions is closely linked with other subject areas, there is little need for a room specially designed for science. A classroom that is a good work room for science will prove a useful room for other creative ventures.

THE OUTDOOR LABORATORY

Children have a direct and active interest in everything that goes on in the everyday world around them. They are eager to watch and 'find out' about all the simple things of the home and the street, such as the drains, the making of roads, and the whole cycle of life in animals, in plants, and in the human family.

In many places, pupils make frequent journeys into the larger world outside the schools. To increase the likelihood that all schools may provide opportunities for outdoor studies in science, a plan for visits has been included in the syllabus. A special outdoor area is proposed for each year, so that pupils will meet many different communities of plants and animals. When different habitats are used in successive years there is little danger of a repetition of topics. Dandelions and meadow voles are found in grassy areas, seldom under a woodland canopy. The white trillium is a woodland plant, and would not likely be found by a class investigating wetlands.

First Year – The school grounds and the nearby surroundings.

Second Year – A farm (or a town area for rural children).

Third Year – A woodlot, forest, park, or other treed area.

Fourth Year – A pasture, meadow, fencerow, or other open area.

Fifth Year – A marsh, lowland, or other safe wetland.

Sixth Year – A creek, brook, or other shallow stream.

Clearly, any program for outdoor activities would depend on the variety of landscapes close to the school. Distinctive local features, such as the marine life on James Bay, the flora and fauna of the sand-spits in the Great Lakes, or the relief of the Niagara escarpment, might replace other topics.

Field work should be the vehicle for the development of many topics that are not specifically listed in the syllabus. For example, the concept of adaptation becomes clear through the study of particular cases in which plants and animals are adapted to their environment. Interrelationships between living things, the balance of nature, food chains, and plant succession may also be observed in the field. First-hand experience will support the case for the continued conservation of resources.

Outdoor science programs can be carried out in many ways. Much work can be done in the school grounds, especially where school authorities have been able to provide small field study areas adjoining the playground. Such land laboratories may range from a quarter acre to fifteen acres in size. Some schools own a school forest. Some schools own a farm. Others have agreements allowing access to public or privately owned lands. Some authorities maintain lists of localities to which buses might travel; the lists specify features that might be studied and available facilities. Some authorities have developed school outposts where classes work in the field for a day at a time, and others have built residential schools for outdoor work extending over several days.

Most teachers plan a few longer journeys for field studies in greater depth, as well as more numerous limited trips and inquiries. Frequent trips are desirable, since in every season the field areas will display different features.

APPENDIX A
NEW RESOURCES FROM CURRICULUM GROUPS

In recent years, educational and scientific personnel have collaborated extensively to develop new materials and to encourage fresh approaches to science in the schools. The new materials include booklets, books, equipment, and kits of apparatus that support the practical work in many topics. Most materials have been developed gradually so that each item could be tested, revised, and tested again before being issued for general use. Materials are but part of the product. Each group has developed a rationale which underlies its activities and presents a new approach to science.

O.I.S.E.

In 1963, the Ontario Curriculum Institute named a Science Committee of fifteen members. This group prepared an interim report that assessed the position of science in the schools, and proposed a continuation of the study and development of a curriculum that would have a major emphasis on science as a process of inquiry.

The 1964 Summer Project involved scientists from the universities and teachers from the classroom. Together they developed such units as Matter, Measurement, Microscopy, and Comparing Animals. These units were prepared to lead the students to discover some basic ideas in science. The criterion of success of the units follows: '*If* children could be guided to formulate meaningful problems and to discover by scientific methods of inquiry their own answers, *then* the lessons could be considered successful.'

In succeeding years the O.C.I. Science Committee continued to devlop and test other units, to devise and assemble apparatus for class use, and to introduce many teachers to a new approach in the classroom. The working philosophy of the Committee has been summed up as follows: 'Fundamentally science is a process of inquiry involving the obtaining of data and its critical interpretation, the development of principles, and the recognition of coherence in the data and principles. The teaching of science must involve the student in the processes of inquiry.'

Since September, 1966, the Committee has become a part of the Ontario Institute for Studies in Education (OISE).

O.T.F.

In 1964, the Ontario Teachers' Federation appointed a Science Subject Area Committee of eight teachers. The members gathered data and have already prepared monographs on several themes. The Committee has acted as a task force to do research on several problems in science education, one of which is the field of outdoor education.

A.E.F.O.

In the summer of 1966, a committee of the Association des Enseignants franco-ontariens, an affiliate of the Ontario Teachers' Federation, prepared a series of brochures for teachers of the Junior Division. Each includes many practical suggestions, and proposes teaching methods that are consistent with the new orientation of science in the schools. Pupil activity is stressed: 'Le programme est conçu de façon que les expériences soient faites *par les élèves*. Il est essential que cette directive soit fidèlement suivie pour la réussite du programme.'

E.S.S.

Founded in 1960, the Elementary Science Study has pioneered in developing materials that allow for the flow of ideas originating from the curiosity of children. The units are based on simple things, on concrete materials that are divorced from a technology that frequently becomes outdated. The purpose of the project is not to develop a national curriculum, but to supply a variety of carefully thought-out and tested materials for use in schools. Little emphasis is given toward development of a sequential program with specific structure as to grade level. In 1966, the first five of the ESS units became available from commercial sources.

S.C.I.S.

Since 1961, the Science Curriculum Improvement Study has been exploring a concept of science education based on communicating scientific literacy. It is developing an articulated sequence of studies between Kindergarten and Grade 6. The SCIS program attempts to develop in children's thinking a hierarchical structure of concepts that later become more and more sophisticated.

Each topic represents an application of previous elements of study and at the same time lays a foundation for subsequent elements. The trial edition of 'Variation and Measurement', published in 1964, states: 'the individual lessons are planned to commence threads of thought and inquiry, not to conclude and summarize undertakings.'

A.A.A.S.

In 1962 the American Association for the Advancement of Science appointed a Commission on Science Education which was to have broad concern for science education at all levels. Although its major concern was a development of the curriculum from Kindergarten to Grade 6, the Commission also studies the relation between new course developments in the natural sciences and the social sciences.

The AAAS have developed 'Science – A Process Approach'. The purpose is to develop childrens' skills in the processes of science (classifying, communicating, measuring, using numbers, observing, controlling variables, defining operationally, formulating hypotheses and models, interpreting data, predicting, and so forth), to show how the processes are used, and to allow for experience in using these processes.

By 1965, the Commission had produced the Third Experimental Edition of 'Science – A Process' Approach'. The instructional materials consist of descriptions of exercises so that the teacher can arrange for an orderly progression of learning experiences.

The AAAS program samples widely in subject fields, but little emphasis is placed on the sequence and scope of subject matter. The relation has been stated as follows: 'Science can be thought of as activity and as content, as process and as product. Indeed these two are inseparable and interdependent. The product owes its existence to the process; on the other hand, the process is impossible and also pointless without the product, the knowledge of science'.

NUFFIELD JUNIOR SCIENCE TEACHING PROJECT

In 1964 this project was initiated under the Nuffield Foundation. Its stated purpose was 'to help those who wish to use science as an educational tool in the teaching of children in the age range five to thirteen years.'

The educational practices of the project follow from several premises. First, since children need a great breadth and multiplicity of practical experiences, the teacher's job is to supply an environment rich in materials and with many opportunities for experience.

Second, since children behave naturally in a scientific way the teacher's job is, by discussion, to help them proceed, but not to tell them how.

Third, since the most successful work arises from the questions of children, the teacher's role is to produce situations that will cause questions, and then take up the questions for study.

Fourth, since the real test of a conclusion is whether it fits what is observed, the teacher should help the child to look critically at his work.

Fifth, since children who have observed or discovered something always want to express their discoveries, the teacher's job is to have a good variety of materials available and to encourage its use for the communication of ideas.

Sixth, since children do not see the world in terms of subjects, the teacher's role is to see that science fits snugly into the whole curriculum.

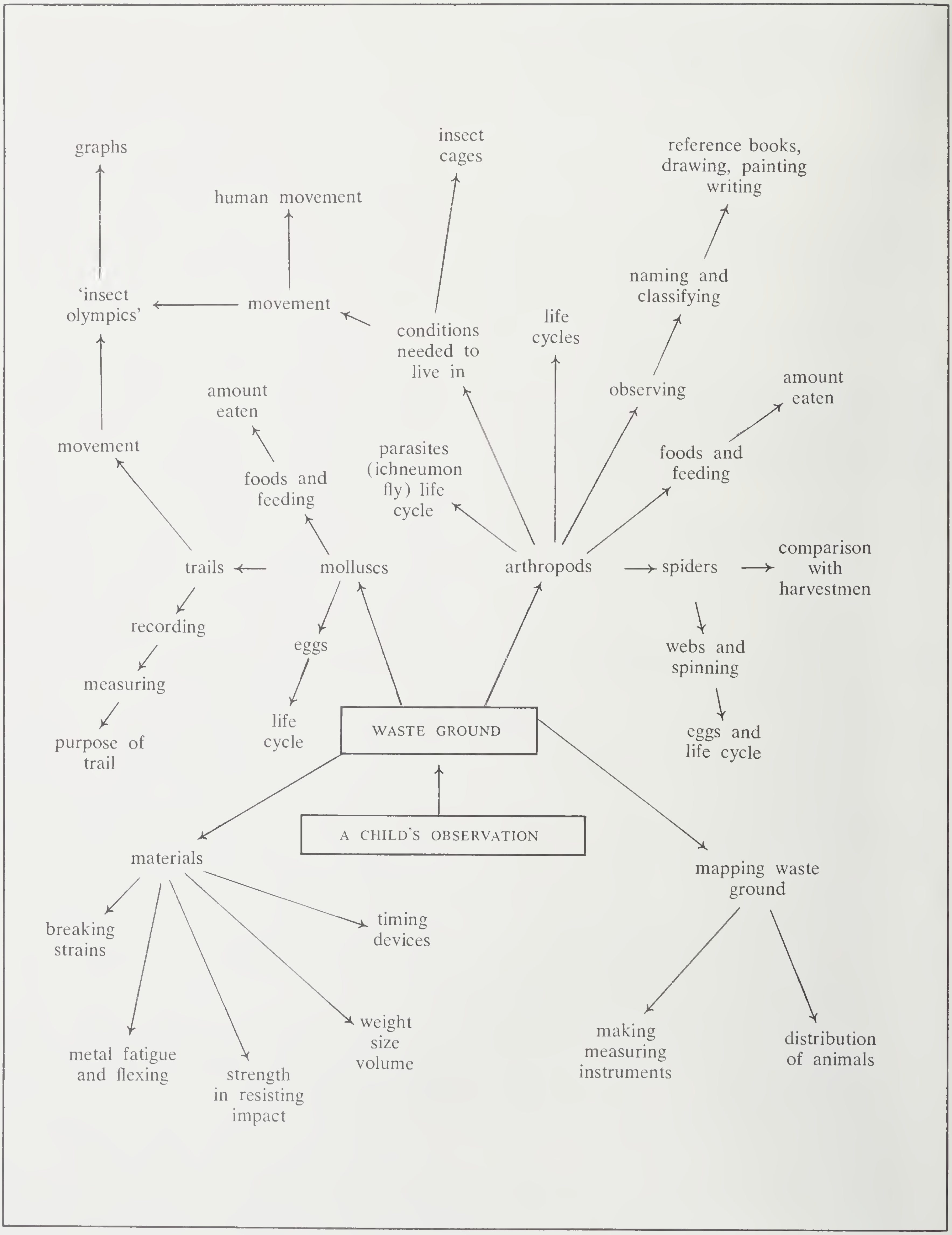
Many other curriculum projects are under way in other countries. These resources of ideas and materials are at all stages of development; some are now available for school use.

APPENDIX B
CASE HISTORY IN THE NUFFIELD JUNIOR SCIENCE PROJECT

The following excerpt is reprinted with the permission of the Nuffield Foundation Science Teaching Project, and is included as a sample of a recent curriculum development in the U.K. It is one of many case histories first printed in the Preliminary Version (1965) of 'Junior Science: Case Histories'.

A STUDY OF URBAN WASTE LAND

Code Number	N.E.8
Class/Age/Ability Range	Age: 9-11 years. Ability: Unstreamed, but very few bright children. Mixed class.
Class Number and School Roll No.	29 80
Building	1900-18. Soon to be demolished.
Classroom	Modern furniture. One electric power point.
School Environment	Urban. Close to heavy industry and gas works. Slum houses all around the school being demolished. Serving slum clearance area.
Local Setting	Industrial area, port; iron and steel making and associated industries; chemicals.


graphs
insect cages
reference books, drawing, painting writing
human movement
naming and classifying
'insect olympics'
movement
conditions needed to live in
life cycles
observing
amount eaten
amount eaten
movement
parasites (ichneumon fly) life cycle
foods and feeding
foods and feeding
trails
molluscs
arthropods
spiders
comparison with harvestmen
recording
eggs
webs and spinning
measuring
life cycle
WASTE GROUND
eggs and life cycle
purpose of trail
A CHILD'S OBSERVATION
materials
mapping waste ground
breaking strains
timing devices
weight size volume
metal fatigue and flexing
strength in resisting impact
making measuring instruments
distribution of animals

HOW THE STUDY BEGAN:

Keith could hardly wait to tell everyone: 'There's a beehive on the common.' They all wanted to see it, so the teacher suggested that they should go and look. Perhaps they might find other interesting creatures. The common is a piece of waste land on which slum houses once stood and which has been colonized by a variety of plants.

They found the bees living in a hole in the wall alongside the railway embankment and after watching them for awhile the children searched for other creatures. They were astonished at the number they found. There were spiders, harvestmen, grasshoppers, wood-lice, slugs, devil's coach horses, crane-flies, leaf beetles, a small white butterfly, a hairy black caterpillar, and many others. In their excitement the children asked few questions, chiefly:

'What is it?'

'Will it hurt me?'

'What does it eat?'

Some of the creatures which were taken into the classroom were housed in aquaria containing soil, stones, and plants; others were put into plastic lunch boxes or cages made from acetate and cheese boxes. Soon the children were absorbed in watching them. A few tried to find their names in reference books; other made simple crude drawings. There was much discussion.

HOW THE STUDY DEVELOPED:

Within a fortnight the children were observing closely and asking many questions. A few began to follow up their questions with experiments, but mostly they continued watching and handling their specimens. They worked alone or in small groups, following their own inclinations and showing little interest in other people. The teacher provided the necessary materials and moved from child to child discussing work and listening to all they had to say.

Brian tried to find out what conditions his devil's coach horse preferred. He covered half of a plastic lunch box with black paper, put the beetle in the centre and watched which way it went. Dennis sloped his container until his bettle remained on the same spot with all of its legs moving, then went on to see which surfaces it could grip easily.

Those who were keeping slugs noticed that their trails made a map of their movements. They dusted chalk on the wet trails to make them easier to see, deciding that white chalk on black paper was best. Stephen first used string to measure the lengths of the trails, but later made a trundle wheel from a cog wheel of an old alarm clock. One night a large slug escaped and crawled twenty-one feet from its cage. Bobby noticed that the trail ended suddenly and the slug was part of the way back along it. He thought that it might be using the trail to find its way home again and tried to test this idea.

The teacher, noticing their growing interest in movement, suggested an 'insect olympics'. Various creatures were timed over one foot and results were shown graphically using match boxes as units. Geoffrey thought the more legs a creature had the faster it could move. When reference to the graph proved him wrong, he wondered whether those with the longest legs could run fastest and tested this idea on his classmates.

Experiments were devised about food preferences. Some were discovered accidentally, as when a devil's coach horse ate an earwig. Others were established by offering a choice. The children calculated the quantity of green leaves eaten by a slug in one day, and in order to see exactly how it ate they mixed some flour and water together, smeared it on a piece of acetate, and watched from below as a slug ate it. Robert announced: 'I know how slugs eat. They kind of scrape,' and was delighted by the scraping sounds made by a large black slug as it ate a leaf.

There were moments of intense excitement when the unexpected happened. Linda and Barbara saw ichneumon fly larvae emerge from a caterpillar and change into cocoons and asked for books to find out more. Dennis was astonished when his devil's coach horse flew across the room. This started him examining other beetles to see if they had wings. Christine watched her slugs lay eggs and wrote her own booklet about it. Experiences like these resulted in discussion, writing, and drawing as the children wanted to communicate their findings.

More slugs' eggs were found and Lynne tried to find the best conditions for hatching. Spiders aroused great interest. Dennis tried to persuade one to eat dead flies. He watched it spin a web and made a coloured drawing of the various stages of construction.

He teased out an egg cocoon, counted the number of eggs and with Barbara made an inch of eggs in order to find the size of one.

The children's work spilled over into their spare time. Carol and Pauline had seen a bee on the common getting nectar by, '. . . sticking its tongue right down into the petals.' Keith said, 'There's a beehive in the museum and you can see the bees going in and out.' Three of the boys made a hive, working from Keith's description, and put it on the common in the hope that bees would use it, but it was destroyed. In any case, Alan had insisted that if they wanted bees to use it they would have to catch a queen and put her in first.

The children noticed that they didn't always find the same number of creatures on every visit to the waste land, so at the teacher's suggestion they agreed to select a number of small plots and study the animal population in each one. They knew that marker pegs would be destroyed, so they measured and mapped the common and showed the position of each plot on a map. They made their own instruments and had to devise methods of fixing a position on the map.

Towards half-term the teacher wrote, 'The children are much more aware of their environment than they used to be, and are constantly discovering objects of interest. Mere identification of a creature will not now suffice.

They wish to know more about the creature and are prepared to go to some trouble to find out. For example, a cockroach was brought in by Norman and Robert. They were arguing about its sex. They remembered that we had a set of pictures showing male and female cockroaches, but nobody knew where the pictures had been stored. They made a thorough search, and with help, unearthed the pictures to confirm Norman's opinion that it was a male. They observe more closely and ask more detailed questions.'

During the second half of the term the children began to gather pieces of waste material from demolition sites. They were spread out on a table in the classroom. The teacher gathered together those who were interested in materials and they discussed them. When he asked them what they wanted to find out about the materials, they were full of ideas. For example:

'Does it bounce?'
'Can it bend?'
'Can it stretch?'
'Will it break?'
'Can you cut it?'
'How heavy is it?'
'How big is it?'
'Can you scratch it?'
'Does it go rusty?'
'What does it feel like?'
'What does it look like under a lens?'

Each child chose a piece of material to examine. Some bent their materials backwards and forwards, others dropped a weight onto pieces of wood resting on two bricks, one or two used spring balances to find the breaking strain of fibres and pieces of rubber. They all wrote.

Following this free investigation they held a reporting session which soon developed into a question time as children asked about problems arising from their experimentation.

Robert: 'Why doesn't rubber float?'
Barbara: 'Why does sponge rubber change colour when it gets wet?'
Brian: 'What is that – like string – made of?' (Part of electric cable.) 'May I look at it through the microscope?'

As each child asked his question, others suggested ways of finding an answer. This marked a change in the children's attitude. Previously they had been absorbed in their own investigations, now they were interested in other people's problems as well and were ready to cooperate.

Their knowledge of materials was put to use as Christmas drew near. Every year, they stretch strings across the school hall and hang decorations. Stephen brought some string but it seemed too thin and weak. They decided to test its strength with a spring balance and found that it needed a 20 lb. pull to break it. They discovered what to do next and many suggestions were offered:

Graham: 'Hold a piece of string at each end, load it with decorations and see if it breaks.'
Alan: 'Put the decorations up and see.'
Lawrence: 'Weigh a quantity of the decorations enough to load one string.'

The teacher said: 'The class decided that Lawrence's suggestion was the most promising, so we followed it. The weight of decoration was only 8 oz. so we went ahead with confidence. As the children moved off to begin hanging up the decorations, Graham remarked that the load would be spread right along each string, therefore, we had extra safety.'

The 'insect olympics' led to an interest in timing, and scrap materials were used to make timers. Sand glasses were made from empty plastic bottles and an unusual timer was made from a metal tube, a wooden block, and a ball bearing. A boy closed one end of the tube, then rested the other end on a block of wood. The ball bearing was placed in the open end of the tube and he could hear it hit the bottom. He altered the position of the block until it took the ball bearing exactly five seconds to travel down the tube. These timers were in constant use.

By the end of the term most of the children had turned their attention to the study of materials and they were determined to carry on with this after the holiday.

OTHER POSSIBILITIES:

1. Plants of waste ground: pollination, nectar, scent, colour; seed production, germination; plant life cycles; adaptation, distribution; interrelationship of plants and animals, food chains; soil studies.

2. Materials: fibres, qualities, strength, elasticity; spinning, spiders and man; resistance to wear, soiling, wetting, staining; shrinking; woven and knitted garments. Body coverings as materials, e.g. fur, feathers, skin, hair. Building materials used by man, wasps, birds.

3. Movement: how animals move, muscles and limbs, centre of gravity, bird flight, fish swimming. Plant movements in response to light, gravity, water, touch. 'Sleep' movements in plants. Moving bodies, friction, lubrication.

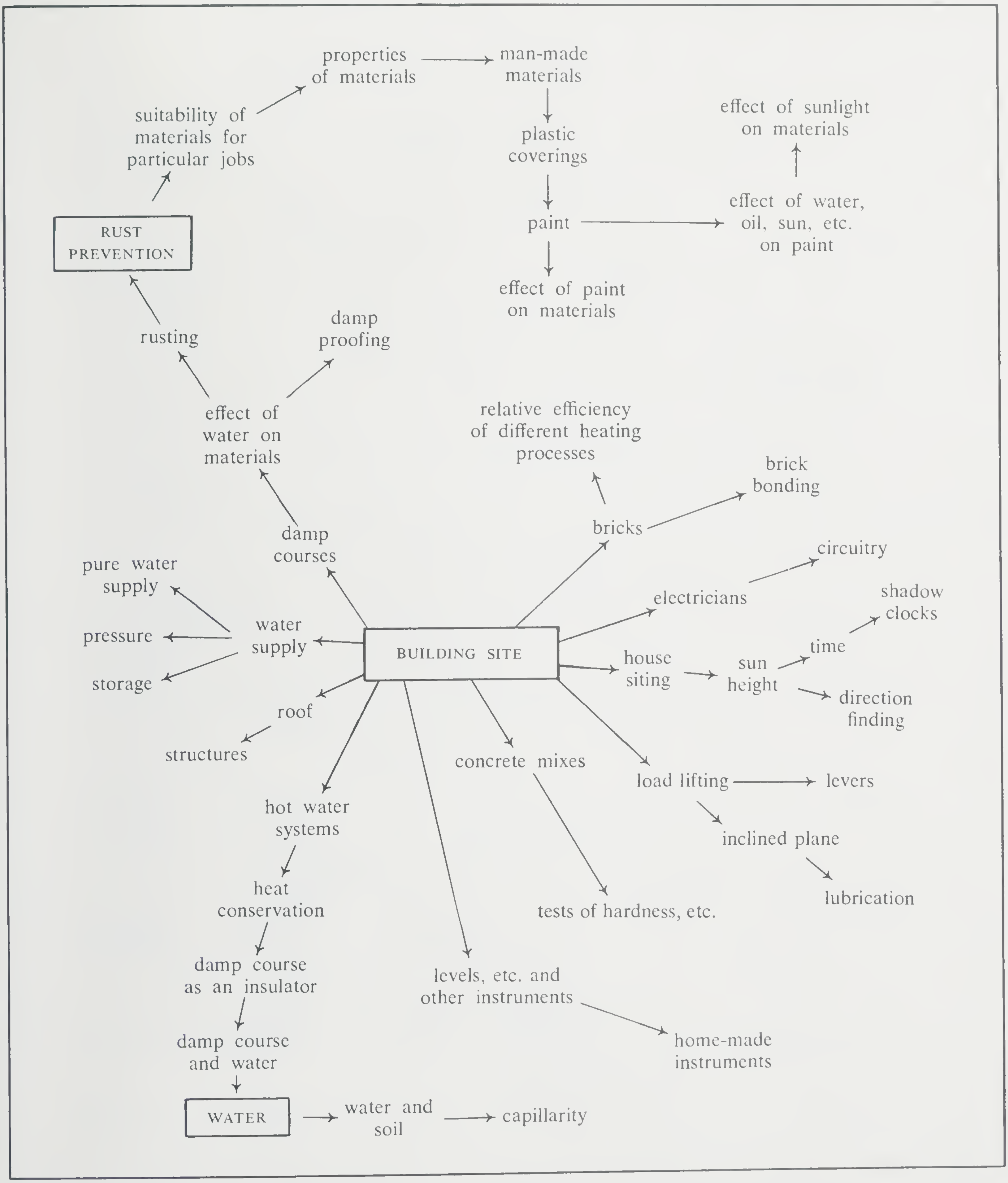
4. Hive bees: keeping observation hive, social life, honey, honeycomb, shape of cells, life cycle, pollen and flowers, over-wintering, hive management, insects and flowers. Characteristics of hymenoptera. Ants as social insects, making a formicarium.

THE SCIENCE WHICH EMERGED:

1. Variety of living things.
2. Animal foods and feeding habits.
3. Animal distribution and adaptation.
4. Life cycles.
5. Animal parasites.
6. Movement.
7. Properties of materials.
8. Breaking strains.

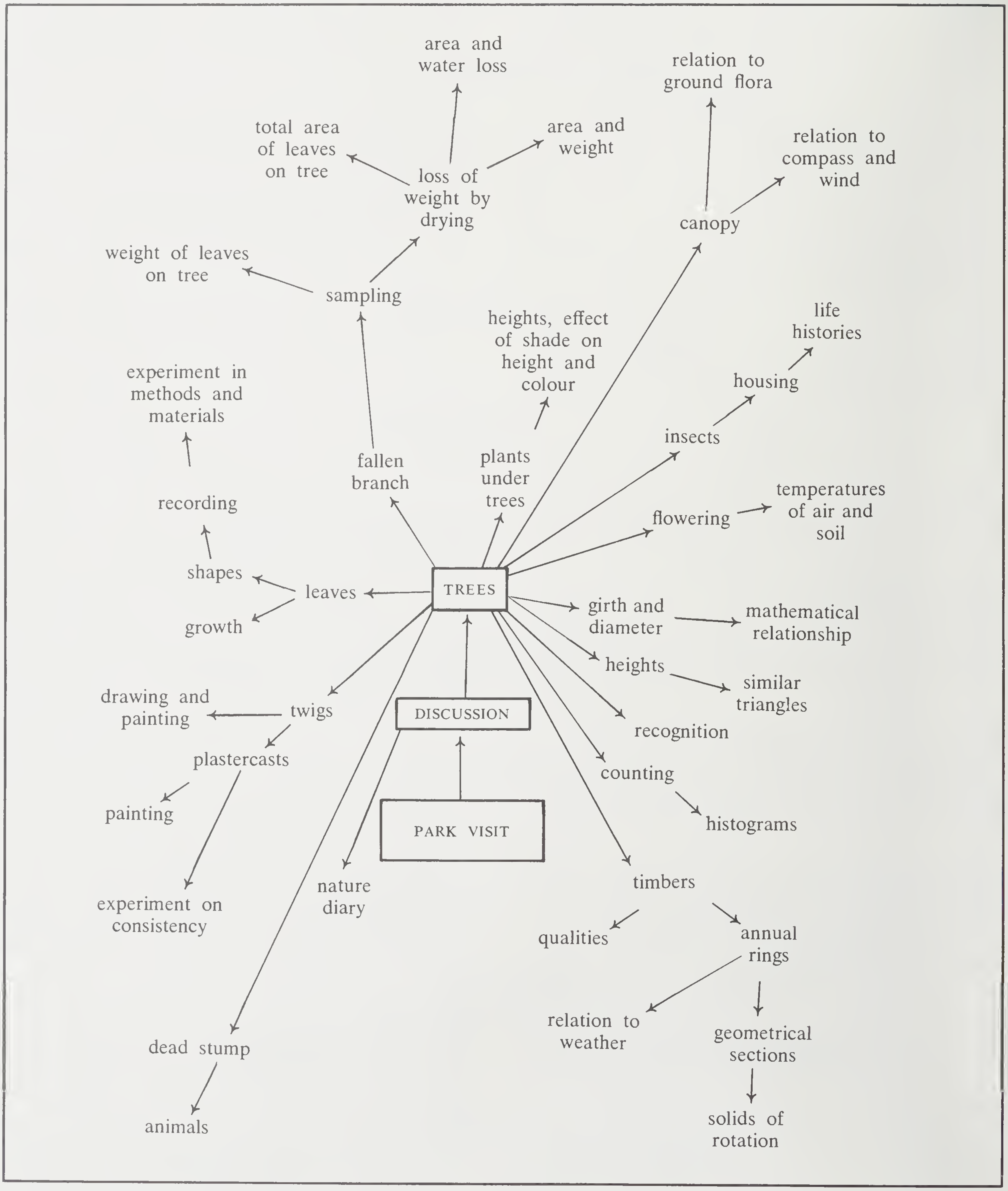
Building Site

This is the first of three extra flow charts to indicate other ventures in the Nuffield Project. This is included to illustrate how an event near the school influenced a program.



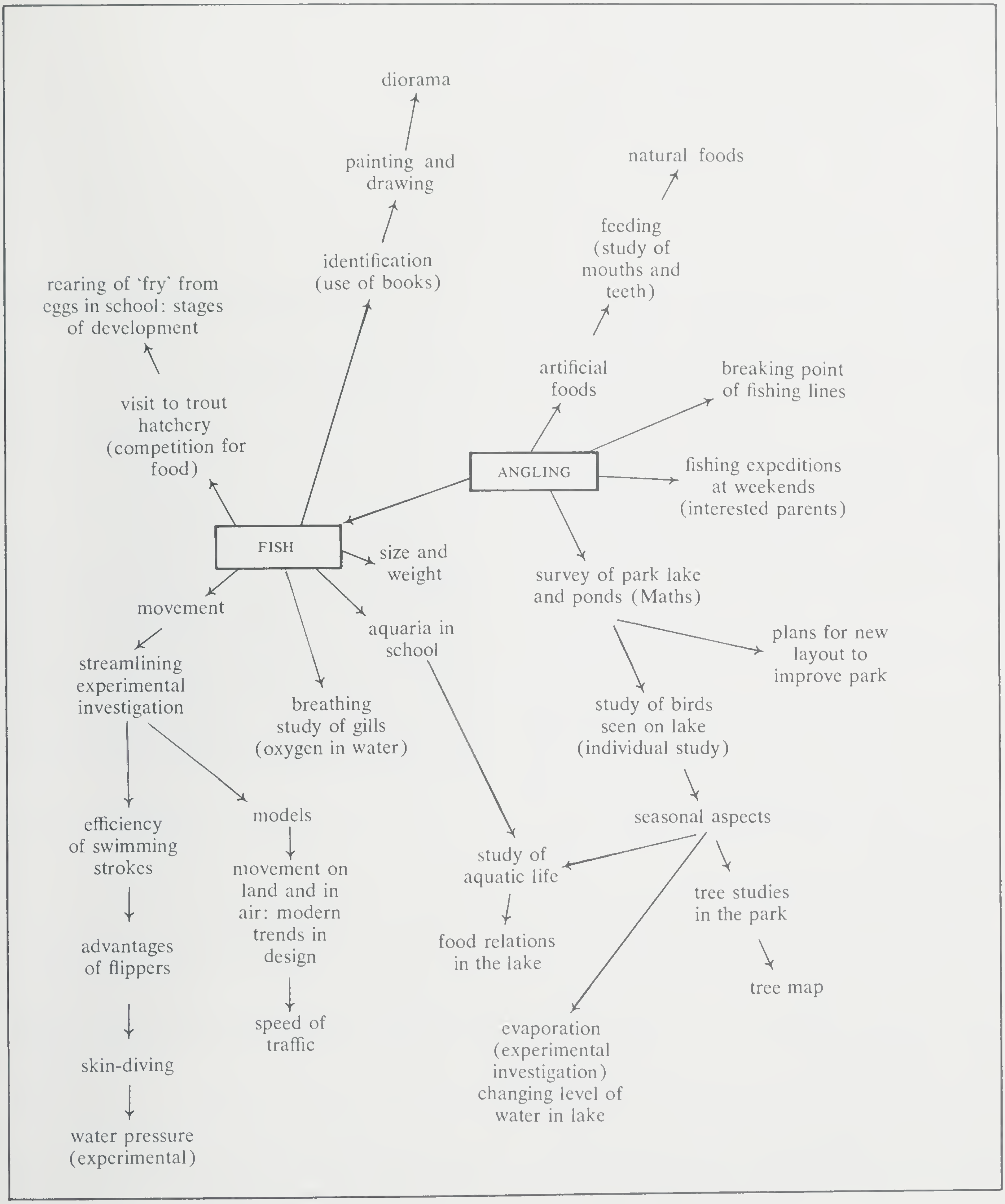
Parkland Study

This flow chart is part of another case history in the Nuffield Junior Science Report. It is included to show the possible links between science and mathematics.



Angling

This flow chart is included to illustrate how a program was based on an interest shown by a group of children.


diorama
painting and drawing
identification (use of books)
natural foods
feeding (study of mouths and teeth)
artificial foods
breaking point of fishing lines
rearing of 'fry' from eggs in school: stages of development
visit to trout hatchery (competition for food)
ANGLING
fishing expeditions at weekends (interested parents)
FISH
size and weight
survey of park lake and ponds (Maths)
movement
aquaria in school
plans for new layout to improve park
streamlining experimental investigation
breathing study of gills (oxygen in water)
study of birds seen on lake (individual study)
efficiency of swimming strokes
models
seasonal aspects
study of aquatic life
movement on land and in air: modern trends in design
tree studies in the park
advantages of flippers
food relations in the lake
tree map
speed of traffic
skin-diving
evaporation (experimental investigation) changing level of water in lake
water pressure (experimental)

APPENDIX C
OBJECTIVES

‘By educational objectives, we mean explicit formulations of the ways in which students are expected to be changed by the educative process. That is, the ways in which they will change in their thinking, their feelings, and their actions . . .

‘Although information or knowledge is recognized as an important outcome of education, very few teachers would be satisfied to regard this as the primary or the sole outcome of instruction. What is needed is some evidence that the students can do something with their knowledge, that is, that they can apply the information to new situations and problems.’

Benjamin S. Bloom
(From *Taxonomy of Educational Objectives: Handbook One*)

The objectives listed below are presented for discussion and consideration. The teacher might determine the degree to which specific items apply to the science program in his own class. The list is not complete, but is representative of the goals and skills that a local committee might set out for a program.

The science program might be expected to develop ability and skill in:

1. observing carefully
2. collecting and organizing data
3. recognizing anomalies and problems
4. delineating and defining problems
5. creating hypotheses
6. making predictions
7. planning experiments
8. devising new equipment
9. controlling variables
10. making inferences
11. interpreting data
12. formulating models
13. describing phenomena
14. forming generalizations
15. recognizing the limitations of generalizations
16. seeking other situations where generalizations are applicable
17. handling materials and equipment
18. describing essential features
19. making operational definitions
20. making graphs, tables and models to present data
21. making interpolations and extrapolations
22. taking samples from a population
23. classifying objects, specimens, and phenomena
24. selecting data from books and other sources
25. expressing ideas in mathematical form

In the course of their science studies, young children will have achieved some progress toward many of these objectives. The particular ones that are associated with each stage of the program will be influenced by such factors as the maturity of the pupils, the characteristics of the local environment, the resources that are available and the selection of topics. If the teacher identifies objectives and plans for them, progress toward goals can be made and recognized. Whenever he tests his work, he can devise testing procedures that will ascertain progress toward these objectives.

APPENDIX D
PRELIMINARY LIST OF SOURCE MATERIALS FOR TEACHERS

1. BACKGROUND READING

DOTTRENS, Robert. *The primary school curriculum.* UNESCO, 1962. 281 p. (Available from the Queen's Printer, Ottawa)

ISAACS, Susan. *Intellectual growth in young children.* Routledge, 1930. 370 p.

LAURENDEAU, M. and A. Pinard. *Causal thinking in the child.* International Universities Press, 1962. 293 p.

LOVELL, R. *The growth of basic mathematical and scientific concepts in children.* University of London Press, 1961. 154 p.

ONTARIO CURRICULUM INSTITUTE. *Science – an interim report of the science committee.* (Available from the Ontario Institute for Studies in Education) 1963. 71 p.

PIAGET, Jean. *The child's conception of physical causality.* Routledge, 1930. 258 p.

WALKER, Marshall. *The nature of scientific thought.* Prentice-Hall, 1963. 184 p.

2. GENERAL CURRICULUM MATERIALS

ASSOCIATION FOR SCIENCE EDUCATION. *Children learning through science, Book 1.* John Murray, 1966. 33 p.

ASSOCIATION FOR SCIENCE EDUCATION. *Materials and equipment, Book 4.* John Murray, 1966. 32 p.

BENNETT, Donald P. and D. A. HUMPHRIES. *Introduction to field biology.* Edward Arnold, 1965. 208 p.

HUG, John and Phyllis J. WILSON. *Curriculum enrichment outdoors.* Harper and Row, 1965. 214 p.

LAWRENCE, E. (editor). *Approaches to science in the primary school.* Published for New Education Fellowship by Educational Supply Association, 1960. 144 p.

NATIONAL SCIENCE TEACHERS' ASSOCIATION. *Ideas for teaching science in the junior high school.* National Science Teachers' Association, 1963. 257 p. (Available from the Association at 1201 Sixteenth Street N.W., Washington, D.C. 20036)

SANKEY, John. *A guide to field biology.* Longmans, 1958. 166 p.

SUCHMAN, J. Richard. *Resource book.* Science Research Associates, 1966. 128 p.

UNESCO. *Source book for science teaching.* UNESCO, 1960. 222 p.

3. SPECIAL SOURCE MATERIALS

AMERICAN GEOLOGICAL INSTITUTE. *Geology and earth sciences source book.* Holt, Rinehart, and Winston, 1962. 496 p.

ASIMOV, Isaac. *Realm of measure.* Houghton Mifflin, 1960. 182 p.

BELL, Corydon. *The wonder of snow.* Hill and Wang, 1957. 269 p.

BITTER, Francis. *Magnets.* Doubleday-Anchor, 1959. 155 p.

CANADA DEPARTMENT OF TRANSPORT. *Weather ways.* (Available from Queen's Printer) 1966. 145 p.

CANADA, NATIONAL FILM BOARD. *The age of flight.* 1966. 4 film strips. (These may be purchased from the Board, P.O. Box 6100, Montreal 3, Quebec)

CANADA, NATIONAL FILM BOARD. *Primary field trips on film.* 1965. 5 filmstrips. (A visit to the pond, garden, farm, seashore, and woods)

COMITÉ DE SCIENCES DE L'ASSOCIATION DES ENSEIGNANTS FRANCO-ONTARIENS (LE). *Projet de sciences: quatrième année,* 1966. 62 p. (Available in September, 1967 from the Association, 60 Boteler Street, Ottawa 2)

COMITÉ DE SCIENCES DE L'ASSOCIATION DES ENSEIGNANTS FRANCO-ONTARIENS (LE). *Projet de sciences: cinquième année,* 1966. 55 p. (Available in September, 1967 from the Association, 60 Boteler Street, Ottawa 2)

COMITÉ DE SCIENCES DE L'ASSOCIATION DES ENSEIGNANTS FRANCO-ONTARIENS (LE). *Project de sciences: sixième année,* 1966. 44 p. (Available in September, 1967 from the Association, 60 Boteler Street, Ottawa 2)

ELEMENTARY SCIENCE STUDY. *Teacher's guide for 'Behavior in mealworms.'* McGraw-Hill, 1966. 56 p.

ELEMENTARY SCIENCE STUDY. *Teacher's guide for 'Gases and airs'.* McGraw-Hill, 1965. 124 p.

ELEMENTARY SCIENCE STUDY. *Teacher's guide for 'Growing seeds.'* McGraw-Hill, 1966. 34 p.

ELEMENTARY SCIENCE STUDY. *Teacher's guide for 'Kitchen physics'.* McGraw-Hill, 1966. 71 p. (For topic Waterdrops)

ELEMENTARY SCIENCE STUDY. *Teacher's guide for 'Small things'.* McGraw-Hill, 1966. 130 p.

FARADAY, Michael. *Chemical history of a candle.* Crowell, 1957. 158 p.

FORD, V. E. *How to begin your field work, Book 1.* Woodland; John Murray, 1959. 47 p.

HARRIS, A. G. et al. *Farm machinery.* Oxford University Press, 1965. 240 p.

HOGNER, B. C. *Farm animals.* Walck (Oxford), 1945. 194 p.

HOLDEN, Alan and Phylis Singer. *Crystals and crystal growing.* Doubleday-Anchor, 1960. 320 p.

KRAYNICK, Steve. *Bicycle owner's complete handbook of repair and maintenance.* F. Clymer, 1953. 126 p.

KUENTZ, Craig. *Understanding rockets and their propulsion.* Rider, 1964. 152 p.

LEMON, R. R. H. *Fossils in Ontario.* University of Toronto Press, 1965. 16 p.

MASON, B. J. *Clouds, rain and rainmaking.* Cambridge University Press, 1965. 145 p.

MEYER, Jerome S. *World book of great inventions.* World Book, 1956. 270 p.

MORGAN, R. F. *Environmental biology, Volume 1.* Pergamon Press, 1963. 238 p.

NATIONAL RESEARCH COUNCIL. *International classification for snow.* National Research Council, Ottawa, 1954. 15 p. (Available from Associate Committee on Geotechnical Research)

NATIONAL SCIENCE TEACHERS' ASSOCIATION. *Investigating science with children, Volume 1 – Living things.* National Science Teachers' Association, 1964. 96 p. (Available from Collier-Macmillan)

NATIONAL SCIENCE TEACHERS' ASSOCIATION. *Investigating science with children, Volume 2 – The earth.* National Science Teachers' Association, 1964. 96 p. (Available from Collier-Macmillan)

NATIONAL SCIENCE TEACHERS' ASSOCIATION. *Investigating science with children, Volume 3 – Atoms and molecules.* National Science Teachers' Association, 1964. 96 p. (Available from Collier-Macmillan)

NATIONAL SCIENCE TEACHERS' ASSOCIATION. *Investigating science with children, Volume 4 – Motion.* National Science Teachers' Association, 1964. 96 p. (Available from Collier-Macmillan)

NATIONAL SCIENCE TEACHERS' ASSOCIATION. *Investigating science with children, Volume 5 – Energy in waves.* National Science Teachers' Association, 1964. 96 p. (Available from Collier-Macmillan)

NATIONAL SCIENCE TEACHERS' ASSOCIATION. *Investigating science with children, Volume 6 – Space.* National Science Teachers' Association, 1964. 96 p. (Available from Collier-Macmillan)

NEEDHAM, J. G. and P. R. Needham. *A guide to the study of freshwater biology.* Holden-Day, 1962. 107 p.

OLCOTT, W. T. *Field book of the skies.* Putnam, 1954. 482 p.

ONTARIO DEPARTMENT OF EDUCATION. *Film Catalogue.* 1965. 367 p. Films listed in the catalogue may be

borrowed from the Audio-Visual section at 559 Jarvis Street, Toronto 5. A representative list follows:

SA- 1 – Animals of the farm
SB-107 – Marsh community
SG- 9 – Fire
SG-100 – Moon and how it affects us
SG-156 – What makes clouds
SG-157 – What makes the wind blow
SG-159 – Energy and matter
SG-160 – How wheels help us
SG-161 – Story of illumination
SG-164 – Science for beginners
SN- 97 – Seasonal changes in trees
SN-147 – Animals, ways they eat
SN-217 – The pond
SP- 11 – The story of the microscope
SP- 22 – Theory of flight
SS-124 – Wonders in your own backyard
SS-291 – Seasons of the year
SS-458 – The dinosaur age

ONTARIO INSTITUTE FOR STUDIES IN EDUCATION SCIENCE COMMITTEE. *Comparing animals.* Ontario Institute for Studies in Education, 1967 (Available from the Ontario Institute for Studies in Education, 102 Bloor Street West, Toronto 5)

ONTARIO INSTITUTE FOR STUDIES IN EDUCATION SCIENCE COMMITTEE. *Matter.* Ontario Institute for Studies in Education, 1967. (Available from the Ontario Institute for Studies in Education, 102 Bloor Street West, Toronto 5)

ONTARIO INSTITUTE FOR STUDIES IN EDUCATION SCIENCE COMMITTEE. *Measurement.* Ontario Institute for Studies in Education, 1967. (Available from the Ontario Institute for Studies in Education, 102 Bloor Street West, Toronto 5)

ONTARIO INSTITUTE FOR STUDIES IN EDUCATION SCIENCE COMMITTEE. *Microscopy.* Ontario Institute for Studies in Education, 1967. (Available from the Ontario Institute for Studies in Education, 102 Bloor Street West, Toronto 5)

ONTARIO TEACHERS' FEDERATION SCIENCE COMMITTEE. *Report.* Ontario Teachers' Federation 1967. (Available after April 1967 from the Ontario Teachers' Federation Office, 1260 Bay Street, Toronto 5.) The report includes these monographs: Astronomy, Birds, Chemistry, Conservation, Energy, Geology, Invertebrates, Machines, Mammals, Plant Growth, and Weather.

PROCTOR, Elsie. *Nature study for primary schools.* Evans Brothers, 1962. 256 p.

RIEHARDS, O. W. *The social insects.* Harper and Row, 1961. 219 p.

SCIENCE CURRICULUM OF IMPROVEMENT STUDY. *Measurement.* Heath and Company, 1967. (Available July 1967)

SMITH, L. P. *Weather studies.* Pergamon Press (Collier-Macmillan), 1963. 100 p.

TRIPPENSEE, Reuben Edwin. *Wild life management, Volume 1 and 2.* McGraw-Hill, 1948.

YOUNGPETER, John M. *Winter science activities.* Holiday House, 1966. 128 p.

4. PROFESSIONAL LITERATURE

CRUCIBLE, published for the Science Teachers' Association of Ontario by the Ontario Educational Association, 3101 Bathurst Street, Toronto 19.

NATURAL SCIENCE IN SCHOOLS, published three times a year by the School Natural Science Society, 8 Sandy Lane, Sevenoaks, Kent, England.

NEW SCIENTIST, published weekly from Cromwell House, Fulwood Place, High Holborn, London W.C. 1, England.

SCIENCE AND CHILDREN, published monthly September through May by the National Science Teachers' Association, 1201 Sixteenth Street, N.W., Washington, D.C. 20036.

SCIENCE TEACHER (THE) published monthly September through May by the National Science Teachers' Association, 1201 Sixteenth Street, N.W., Washington, D.C. 20036.

SCIENTIFIC AMERICAN, published monthly by Scientific American Incorporated, 415 Madison Avenue, New York, N.Y. 10017.

Ontario Department of Education

Curriculum P1, J1

Interim Revision
Social Studies

1970

Social Studies – Interim Revision

This booklet is issued so that schools may continue to develop their programs in Social Studies. The interim revision series, in which this is the last booklet to appear, presents new approaches to enrich programs in current use.

These interim courses are published for *study*, for *discussion* and for *optional implementation* in part or as a whole.

During the development of this outline, invaluable contributions have been made by many individuals and groups. Since the revision of curricula is a continuing process, suggestions and criticism will be appreciated.

Contents

In Brief 4

A General Rationale 5

Phase One: The Neighbouring World 14

The Child and His Neighbourhood 15

The Child and His Community 16

Phase Two: Life in Other Communities 17

Living in Canadian Communities 18

Living in Communities Abroad 19

Phase Three: Area Studies of People Throughout the World 20

Area Studies in the Eastern Hemisphere 21

Area Studies in the Western Hemisphere 22

Bibliography of Professional Books 24

In Brief

The subject of Social Studies provides a vehicle through which the school can offer children in the Primary and Junior Divisions activities related to people, places and events in the world around them. The domain of the subject extends in time from man's early days to the present, and in space from a child's home to the farthest limits of man's exploration.

Year by year fresh facts and fresh insights produce more sophisticated concepts, so that gradually a child finds more satisfying patterns in the world around him. At the same time, he is developing as a person and his teacher uses the subject as an educational tool to enhance this growth in all its dimensions.

The guidelines describe a three-phase structure through which a child first explores the part of the world nearest to him, then communities farther away and finally areas around the globe that are selected for their contemporary importance or cultural significance. In outline:

Years One and Two:

The Child and His Neighbourhood
The Child and His Community

Years Three and Four:

Life in Canadian Communities
Life in Communities Abroad

Years Five and Six:

Area Studies of People in the Eastern Hemisphere
Area Studies of People in the Western Hemisphere

The basic plan delineates general areas for study in which teachers can plan curriculum units and children can pursue ventures. An additional structure based on local situations and current events can keep the curriculum relevant to the world in which young children live.

A General Rationale

The Shape of the Program

1 The domain of Social Studies is broad but distinct. Its realm includes environmental realities such as mountains and muskeg, tides and towns, and the changing face of our planet. The domain also includes the social realities, such as customs and laws, commerce and culture, home and home land, and the great network of relationships among the earth's inhabitants.

The realm of the program in the schools extends from the place where a child lives to the farthest part of the earth and into space beyond, and from the present days of a child's life back to past days and past events.

2 Such a large domain could be explored in many ways but in these guidelines a three-stage program is described. The program sets out activities so that a child explores first the part of the world nearest to him, then communities farther away and finally peoples and places thousands of miles away and hundreds of years ago.

More precisely, in the first phase the child studies his home neighbourhood and his home community. In the second phase he finds out about life in Canadian communities and also how other peoples live and have lived. In the third phase pupils and groups can make sample studies to discover what life is like in the eastern hemisphere and, last of all, in our western hemisphere. Each phase is designed as the basis for a two-year study.

3 The three-phase structure serves as a convenient framework around which to build a program, but additional themes will need to be improvised from time to time as cross-structures. Activities to suit the occasion have always characterized Ontario schools. For example, during Expo '70 many Ontario classes studied modern Japan, some projects extending over several weeks. As a second example, other children looked into their own city where urban renewal was in progress. They worked three months to envision and depict a possible city of the future and then organized an in-school exhibition.

It should be noted that these special activities can be as thoroughly planned as the other theme activities. Structures and cross-structures can become as enmeshed as warp and woof, and neither need be considered as less significant.

4 The week-to-week work in Social Studies is supported by the resources of many disciplines. As has been described earlier, children have the opportunity of examining the world around them, segment by segment. But this world is a real planet inhabited by real people, a whole world of infinite complexity. In analyzing this world, the resources of the disciplines can be put to use.

Anthropology, economics, geography, history, political science, and sociology have an armory of techniques and a treasury of information. Many of these resources are readily available to children, but others will be known only to their teachers who will need to alert the young searchers to their existence and location.

Maintaining Direction

1 Probably every person has a different idea of the function of Social Studies in schools. Each has a different aspiration, each a different expectation, and these differences engender a diversity of approach. Yet there are some common aims that give programs a sense of direction.

2 In the eyes of a boy or girl, Social Studies serves one main purpose: through this subject he becomes aware of the web of relationships between man and his world. Sometimes he needs to know something of man's life in past centuries to understand the present, and sometimes he needs to find out something of distant places to make sense out of his own neighbourhood, yet the question is always the same: "What is my place in this world around me?" Through this question, a child is seeking to know and to understand, for he is looking for meaning in the universe.

3 In the eyes of a parent, the subject has a further dominant purpose: to serve as a tool for the development of his child. Day by day he hopes that the child may become more independent, more trusting, more competent, more sensitive, more expressive, more loving, more generous, more deft, more joyous, more reliable and more complete in a thousand ways.

A child's being and becoming, his growth to maturity, is a continuous process which needs to be facilitated at all stages of his development in such a way that all dimensions of his personality may be nurtured. Social Studies provides an excellent vehicle for fostering this growth.

4 From the viewpoint of today's society, the subject appears as an instrument for ensuring the survival and development of that society.

Through the social studies program, children and young people may be assisted in developing an awareness of values so that, as they grow, they may select for their own those values which they feel to be significant. They may gradually internalize these selected values and eventually become committed to governing their behaviour in accordance with them. The study of a citizen's responsibilities and a citizen's rights can become an integral part of the program.

In addition to showing sensitivity and love for their own country and countrymen, children can show love and compassion for mankind. The eleven-year-old who said that Canada is a country that is "worried about its and the world's problems" and the younger one who proposed "Canada should get five thousand dollars and feed everybody in the world that is hungry" spoke from the heart. Empathy, love and compassion are intrinsic to education, for with them learning becomes humane.

Suggestions for Studies

1 In the following pages 14–23, broad outlines are provided to guide class activities. These outlines represent something between a detailed outline in which the scope of the work is clearly limited and the sequence of topics determined in advance, and the kind of program where each teacher and class group makes its own specialized program.

For two main reasons the syllabus has been written in non-prescriptive form. First, those who learn and those who teach can have a major share in determining what might be learned. It is well known that learning takes place best when children study what they desire to learn. Teachers too have judgments to make about what they feel is important to study.

Second, the activities in Social Studies, even more than in other subjects, are based on local conditions and local experiences. What can be learned about Hamilton is quite different from what could be learned about Cornwall. Further, a child from Patricia and one from Windsor would begin to study life in Fort York or Peking from quite different points of view. Thus the choice of approach and the choice of topic should be made by teacher and pupils so that these choices may reflect the great variety of interests and abilities present in every classroom.

2 These guidelines have one main function: to provide a foundation for the planning of class activities, group ventures and individual projects. They do not list or describe what will be done and what can be learned. The guidelines form a charter or a licence to indicate some limits within which a teacher may plan work. In very general terms the guidelines define a domain for study.

Further, the guidelines provide sample themes and sample ideas that may trigger other ideas. For instance, the reference to "seasonal variations" related to a tourist community on pages 18–19 may lead to ideas of winter games and winter travel, which may bring to mind the snowmobile that has revolutionized winter activities in Ontario. The fresh ideas that the guidelines trigger, not the guidelines themselves, constitute the course.

3 The expansion of guidelines into activities requires access to many resource materials and time for planning. Someone, quite often the teacher himself, will probe suggested themes to find out how much data is available. Between pages 8 and 12, there are sample pages of random data to indicate the wealth of information linked to any theme. It should be noted that items are presented in unordered fashion, much as the raw data would be found by school children in the complex world that surrounds them.

At the same time that a mass of unordered data is being sought and accumulated, one will find organized data in books, periodicals, films and TV programs. In addition to these, every teacher has his own background information. He has learned to sort out ideas, to arrange them in some kind of sequence and perhaps to accept hierarchies from many sources. The greater the scholarship of the teacher, the greater his perception of order in man's accumulated knowledge. But he must remember that the organization is his own order or perhaps the order developed in a discipline. It is not likely to be the same order that a young child will adopt or the order needed in a fresh "here and now."

When children meet a situation where everything has been organized, there is no opportunity left for them to set things in an order reasonable to them. For this reason topical outlines have been avoided in these guidelines and even suggested themes are listed without implied sequence.

4 The development of a theme as a class activity, from starting point to culminating event, usually has four stages: the gathering of data, its organization into a pattern, the expression of this new formulation and the assessment of the operation. At every stage a teacher has the role of the encourager, supporter, adviser and the expediter.

In the first phase, children can use source materials to gather items of information that seem to be related to the theme and the starting point. The data may be so abundant that children will want to work in groups probing specific aspects.

In the second phase, children can organize the information so that patterns can be found to describe events and situations, and thus formulate explanations.

In the third phase, once a child sees meaning, he can express it at easel, work-bench, writing-desk or with film and tape.

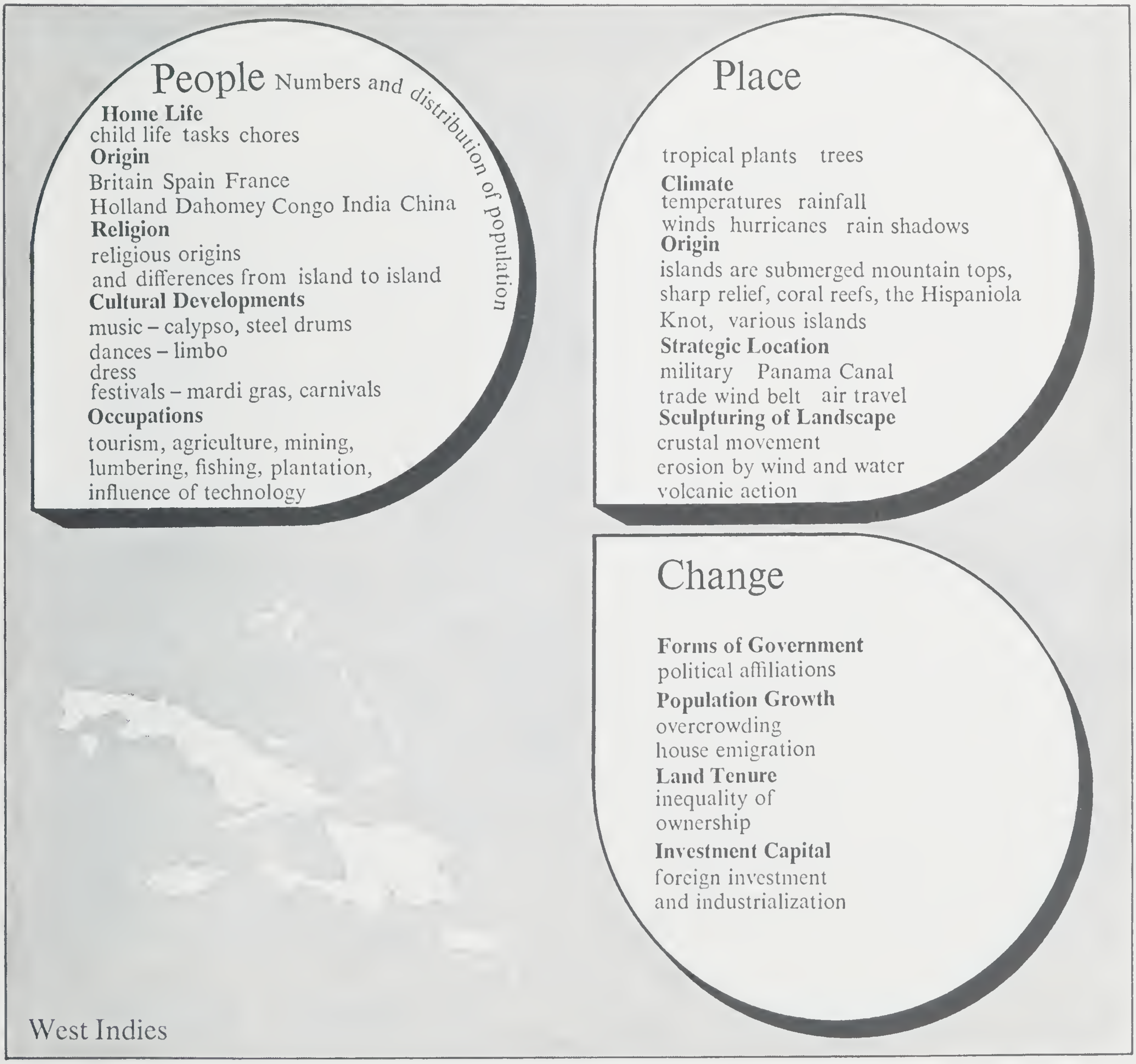
Finally, every venture can be brought to a close in some high occasion or given some special recognition. Sometimes a display announces the findings, sometimes a few boys and girls are invited from another class to hear about the explorations and the discoveries, sometimes time is set aside for a full discussion of the venture by those who shared in its planning and execution. In completing an activity there is always an element of retrospection and evaluation.

Note:

The following sample pages are included as an indication of the possible breadth of a theme. The common feature to all these is the range of random data that is associated with a central theme.

Each theme is presented in a different format.

No page is intended as a theme outline or even as a definition of what could be taught.



People

Numbers and distribution of population

Home Life
child life tasks chores
Origin
Britain Spain France
Holland Dahomey Congo India China
Religion
religious origins
and differences from island to island
Cultural Developments
music – calypso, steel drums
dances – limbo
dress
festivals – mardi gras, carnivals
Occupations
tourism, agriculture, mining,
lumbering, fishing, plantation,
influence of technology

Place

tropical plants trees
Climate
temperatures rainfall
winds hurricanes rain shadows
Origin
islands are submerged mountain tops, sharp relief, coral reefs, the Hispaniola Knot, various islands
Strategic Location
military Panama Canal
trade wind belt air travel
Sculpturing of Landscape
crustal movement
erosion by wind and water
volcanic action

Change

Forms of Government
political affiliations
Population Growth
overcrowding
house emigration
Land Tenure
inequality of ownership
Investment Capital
foreign investment
and industrialization

West Indies

The Icelandic Community

The following lists, arranged in random order, indicate some aspects of Iceland that could be studied to give children an idea of the quality of life in a modern mountainous sea-coast community.

fiords
Myvatn
tourist trade
Grimsey
air lines
skiing
waterfalls
Ingolfur Arnarson
greenhouses
salmon
hot springs
Arctic Circle
cod
population
Leif Ericsson
Keflavik
birch
trawlers
krona and eyrir
University of Iceland
althing
glaciers
Surtsey

books
houseclusters
Thingvellir
climate
Hekla
volcanoes
sagas
national library
Geysir
Jon Sigurdsson
rainfall
Denmark
steamers
Reykjavik
earthquakes
Gimli in Manitoba
sheep farming
emigration to Canada
Icelandic language
non-wood houses
ponies
seal

Life in China Today

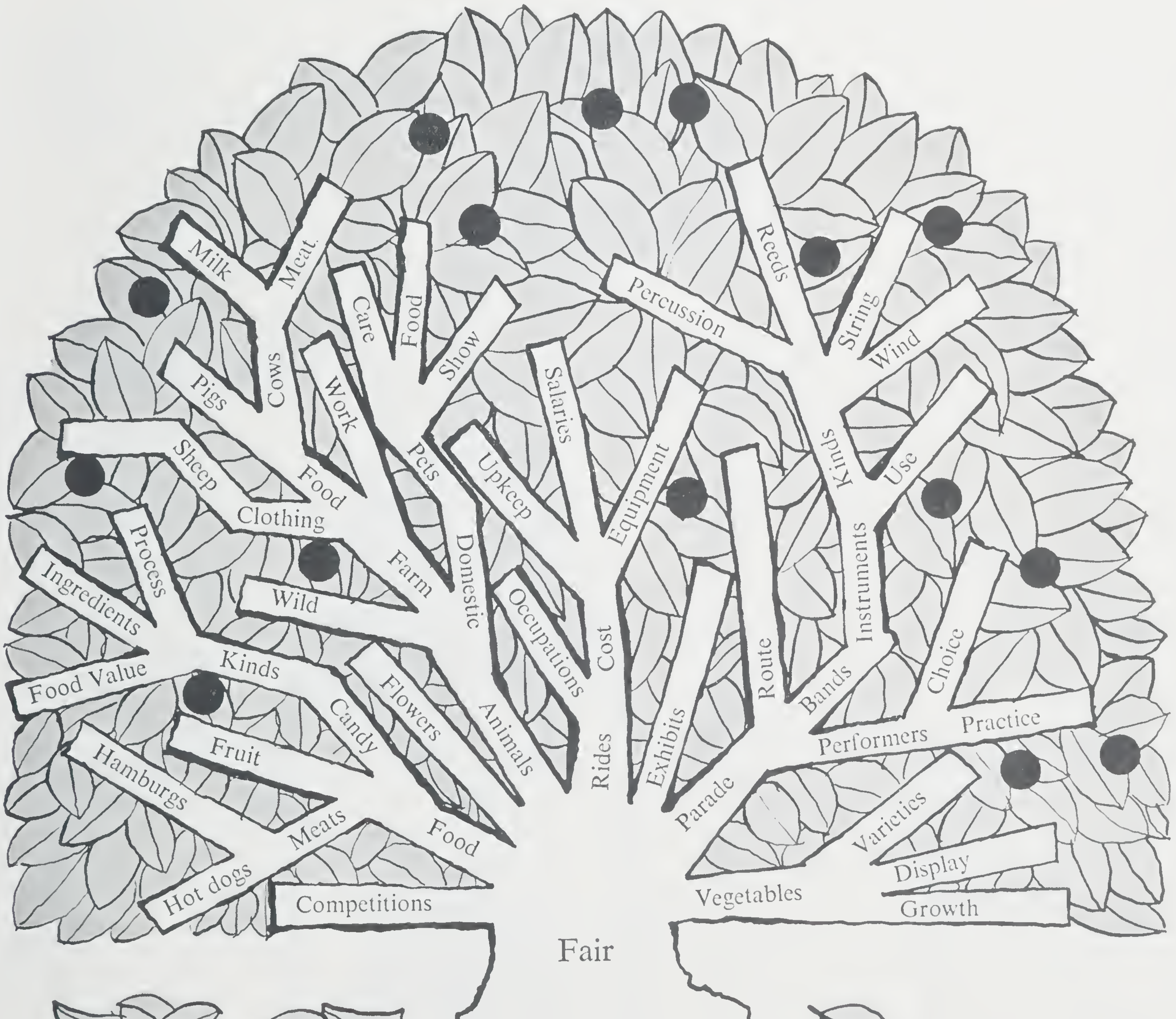
To understand something of modern life in an oriental nation, children should seek information from many sources. Some of the items on this page could lead to interesting aspects of Chinese life.

acrobatics
bamboo
blast furnaces
Boxer Rebellion
Buddhism
Cantonese and Mandarin
characters
chopsticks
Confucius
Cultural Revolution
dragon dance
Dream of the Red Chamber
Diary of a Madman
female emancipation
Great Leap Forward
Great Wall
Han group
irrigation
junks
kite flying
ku, *pipa* and *ti*
Kuomintang
Lao-tzu
Lord Macartney

Mao-tse-tung
Mencius
The Middle Kingdom
Ming dynasty
Moon Festival
Norman Bethune
October First
Opium War
pagoda
Pearl Buck
Peking
People's Liberation Army
porcelain
Red Guards
rice
shuttlecock
silk
Sun Yat-sen
Taiping Rebellion
Taoism
Three Principles of the People
Yangtse
Yellow River
Young Pioneers
yuan

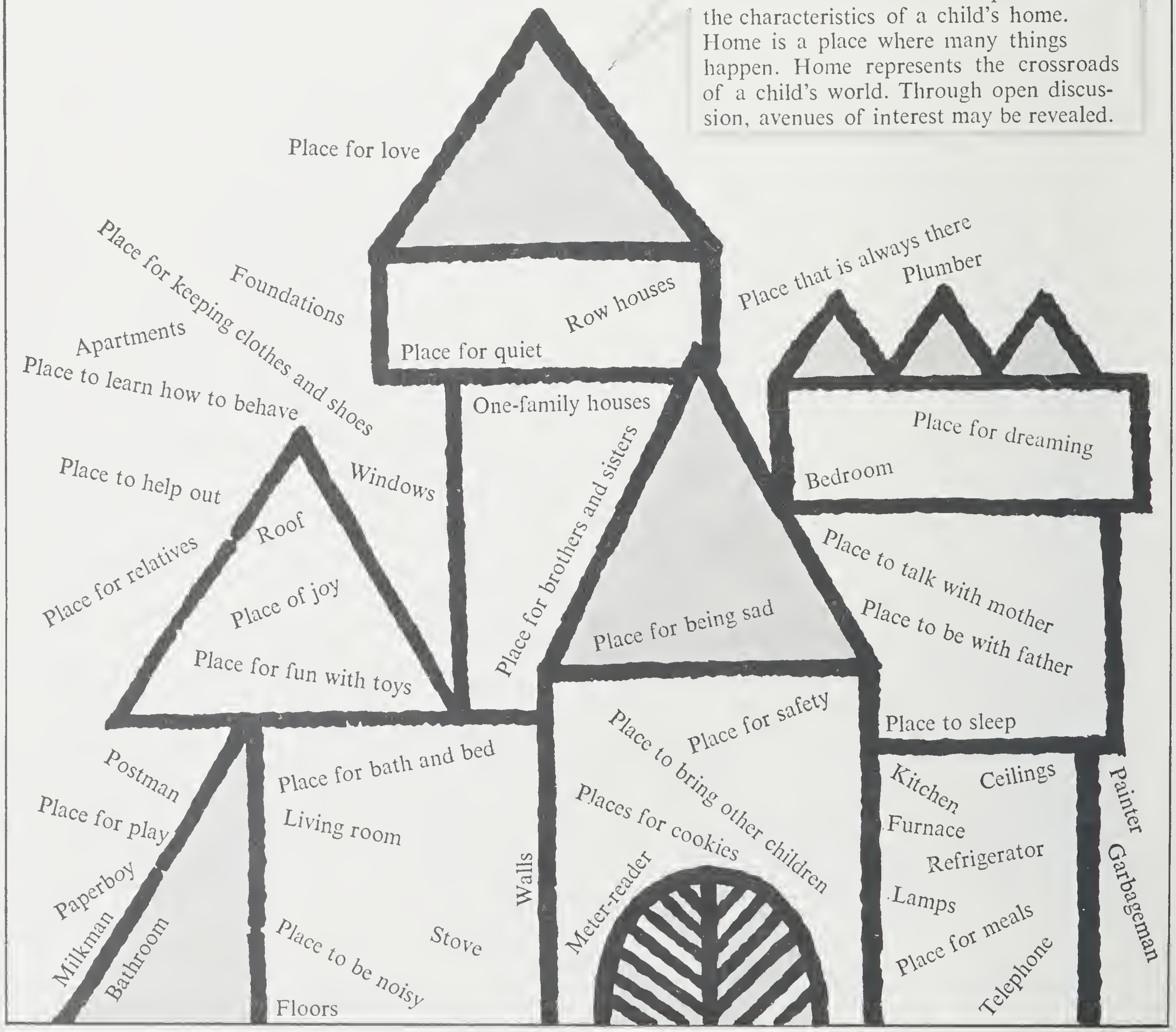
A Fall Fair

This chart shows how some interests of pupils and some suggestions by a teacher may be combined to form the basis of a unit of study.



A Child's Home

The words scattered below depict some of the characteristics of a child's home. Home is a place where many things happen. Home represents the crossroads of a child's world. Through open discussion, avenues of interest may be revealed.

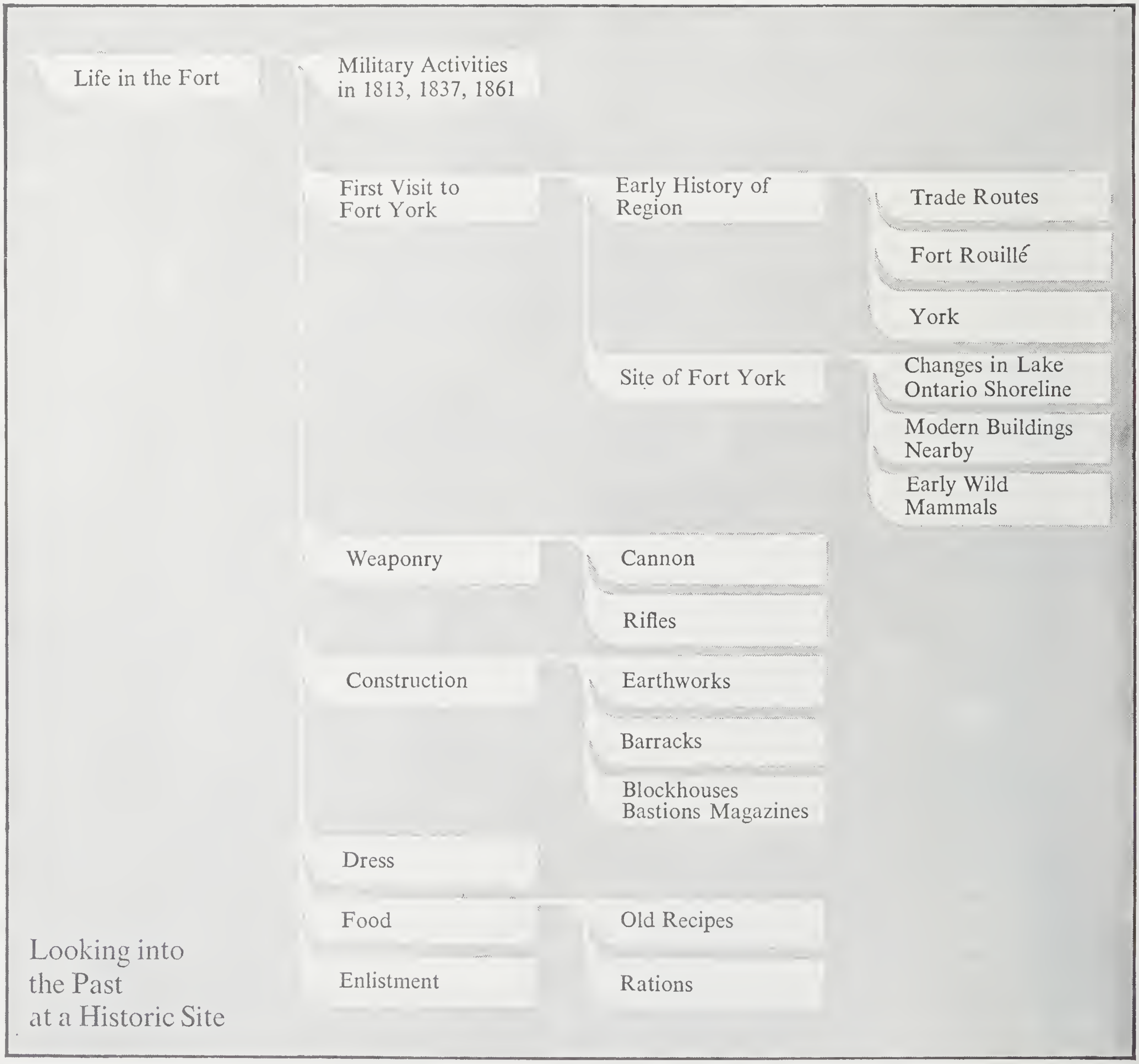


The Voyage of the Nonsuch

Children might select aspects of the voyage that interest them, and thus follow in some depth topics related to a central theme of exploration.

Jib, foresail, mainsail, main topsail, mizzen and mizzen topsail. The *Nonsuch Ketch*. Biscuits and flour, pease and oatmeal, raisins, prunes, sugar and spice, oil and vinegar and eight gallons of lemon juice. Médard Chouart, Sieur des Groseilliers and his brother-in-law, Pierre Esprit Radisson. Wampum. Width 15 feet, and 37 feet long on the keel. Labrador. Forty-four days from land to land. Six small two-and-a-half-pounder guns. Water carried in casks. Cargo of skins worth £1400. From the Thames, June 3, 1668. Anchorage on October 1 in the Rupert River. Usual crew of twelve. Russians wanting first-class beaver furs. Captain Gillam, Pierre Romieux the French surgeon and two mates, Thomas Shepard and James Tatnam. Belcher Islands to south end of James Bay. The new *Nonsuch* launched on August 22, 1968. The original *Nonsuch* purchased for £290 in 1668. Founding of Hudson's Bay Company in 1670. A vessel of the galiot order equipped with two masts. Wooden cabin on shore. Coureurs de bois. Sailing down latitude of 59° North. Sale of *Nonsuch* for £152 10s. A mermaid with raised arms and tail terminating in decorative foliage. Lion masks. Piloting the *Eaglet* and *Nonsuch* ketches out the River. Leaded windows. The whole Country full of Spruce. Places of rendez-vous in case of separation. English businessmen and courtiers. Direct access by sea to furs of the northern forest. Forty or fifty tons. About 1,400,000 square miles of Canada. Polar bears. To the River on the East side which the *Indians* told us of. October 1669. Hanging knees. English oak and elm. Returned with a considerable quantity of Beaver. Tall mainmast in front and small mizzen behind setting square sails from both. King Charles II. Salt beef and pork, hard biscuits and bread. Lighting from candles and oil lamps.

Random data describing the 1668–69 voyage of the Nonsuch and the replica that came to Canada in 1970, from the Winter 1968 issue of "The Beaver" and the H.B.C. Nonsuch booklet.



Looking into the Past at a Historic Site

Considerations in Planning

1 Planning the activities should be a joint venture of those who will teach and those who will learn. Teachers bring to the planning session their knowledge of what resources are available and what experiences may benefit children; reveal what they already know and what they might plan for. Teachers can see what children need as well as what they enjoy.

Although teachers have more and more information in mind and at their fingertips, their primary role is to be "experience-providers" rather than "information-providers". Though there are few certain answers to the question, "What is the best experience for these children?", usually the best experiences emerge naturally.

Sometimes books on library shelves will reveal the adventures of the early settlers of Ontario. Magazines and newspapers may introduce children to the conquest of space. Through television pupils can see the wave of immigration that opened up the West early in this century or the industrialization of post-war Japan. Through films, they can follow the Trail of '98. A short field trip may bring them to a work crew patching a sidewalk pavement; a longer one may bring them to a pioneer village.

2 Children like to do things and to do them well. They want to learn how to conduct interviews, how to gather information, how to analyze and organize data, how to make decisions, how to criticize constructively. They need to know some of the practices of field work, such as setting out a transect and recording data in a field book. When there is information to be collected, they will need to know how to represent time, distance and quantities in tabular and graphic form.

On occasion, skills may be taught in advance of need, but often it is wise to wait for the situation where a skill is needed. Pupils should understand that there is no mystery about the origin of skills, but that other children, other men and women have invented many techniques and devices to probe incisively into the world and to portray more clearly what the world is like. Teachers and children have inherited this great wealth of skills.

3 Children are seldom satisfied by merely making the discovery; usually they want to show their findings to others. This expression is a natural and integral part of the experience and, as the "experience-provider", a teacher can arrange that a child have many media for expression.

After a trip on a ferry, a youngster may plan to build a tanker on a workbench or paint what he saw at the dockside. He may want to capture again the cry of gulls on tape or record the voice of a young crewman. With camera, he may portray ship's officers on duty or the skyline as the ship leaves the dock. Some things he can put down on paper and other things he can recount to classmates as anecdotes.

4 Planning can include the formulation of short-range objectives that are consistent with long-term aims. As it develops, the program will depend on occasions and circumstances in the contemporary world, on the child's degree of interest, on the resources of materials and techniques provided by the teacher, and on the general pattern of school life. As units of work take their shape, detailed objectives can give immediate purpose to the activities in progress.

Setting down objectives in the development of the course requires scholarship and sensitivity, for objectives should be consistent with the aspirations of the pupil, the expectations of the teacher, and the unfolding opportunities that the course presents.

Phase One: The Neighbouring World

A child of six or seven lives a life centred on himself, his family, his friends, his house, his street, and his part of town or countryside. In addition to these surrounding realities, a wider world reaches towards the child through the television screen and the medium of print. Thus, a young child in the beginning years of school life is confronted by a complex world every day. While the school is not usually the centre of the child's life, it serves as a meeting place where children and teachers together can deepen and widen the experiences in the real world.

For these early years of a child's life, the teacher has two options. He may plan these experiences under the subject heading of "social studies" or he may include experiences from the nearby environment within the integrated education of the child.

Social Studies as a subject for study by young children becomes appropriate when there is proper correlation. Accordingly, the arts, language, mathematics, and science should be related to the chosen themes and topics, wherever desirable.

Alternatively, many teachers introduce the neighbouring world to young children in a global style, without reference to specific subjects. Through integrated study, children meet the world as it is and analyze it, using every skill of questioning, observation and description at their command.

In the first two years, the immediate neighbourhood forms the starting point for the child as he makes his personal exploration. The familiar sights, sounds and happenings provide a pool of rich experience. His ever increasing knowledge forms a basis from which he can compare and contrast his environment with that of other children and other people whom he meets in books, television, the cinema and through other media.

In Phase One, as in other phases, the syllabus shows a dual structure, one local and one universal. A large part of the syllabus lists suggestions for the study of the nearby world. But teachers are aware that a program becomes artificial unless the whole of life touches the school. Hence in a kind of cross-structure, other themes intrude.

These cross-structure themes bring current events into the schools. When a new record is set in around-the-world travel, when fresh information is obtained from a space probe, when dissent and strife touch men's lives, children are made aware of the school's concern with world events and world issues.

The Child and His Neighbourhood

During this first year, the program depends on the realities that the child touches and that touch him, the neighbourhood within walking distance. These realities are the realities of the contemporary world and the world of previous generations. Accordingly, the program will change from year to year, reflecting the changes of the neighbourhood and the changing hopes and hazards of contemporary living.

Already by the time they enter school, boys and girls have discovered a great deal about the neighbourhoods in which they live. They have much to share with their schoolmates, much still to find out, and they have yet to organize many isolated facts of experience into patterns of thought. During this year the teacher can devise starting points around which units of work can develop. By way of example, the following themes are suggested, from which selections might be made.

The family as a basic social group could be studied. A child is usually interested in his place as a member of the family.

Such experiences as sharing, compromising, making decisions, carrying out responsibilities and obligations could be part of a unit on *living as a group in a home*. Children are also interested in the *activities in a home*, from making pies to caring for the ill.

The *house or apartment* can lead to a study of the many persons who supply services to the home or to activities that take place within the home.

The topic "*My School*" can lead to the discovery of the many relationships among school personnel and the children.

Exploration of the *school building* and *the playground* may lead to pictorial maps and to the gradual unfolding of concepts familiar to geographers: north-south and colour-coding on a map, for example.

Excursions to nearby *streets* may lead to a study of houses and the changes that are taking place.

The neighbourhood studies may extend to *individual shops* and to *plazas*, where direct observation of the provision of goods and services can promote classroom activities.

Places of meeting such as churches, parks and theatres and *special days* such as Thanksgiving and Remembrance Day can provide starting points for discussion and activities.

Great events, both joyful and tragic, that occur beyond the neighbourhood should become part of the school program. Otherwise the limited domain for Year One would deprive children of a chance to discuss current events that affect their community.

Note:

The program indicated for Phase One is designed for a period of two years. However, the long-term themes, *The Child and His Neighbourhood* and *The Child and His Community*, may each be allotted more or less than a year, and hence Phase One may be treated as a continuum.

The Child and His Community

In this second part of Phase One, a child is encouraged to examine life in his own community. For children living in towns and cities the community may extend many miles beyond the home. Where population is scattered, the home community may be considered to include the countryside and the nearest centres used for shopping, education and entertainment.

Half a century ago when most Canadians lived in villages or in rural areas, it was possible for children to know the farmer, the butcher, the baker, the blacksmith, the station agent, the lawyer, the mechanic and other residents. It was easy to see the web of human relationships that supported community living. Now with four out of five Ontarians living in communities of over one thousand inhabitants, the school can perform a useful function in giving a child the opportunity to see patterns in his home community.

The following suggestions are intended to serve as examples, not to limit or define the program.

Children can explore hills and valleys, streets and streams that give *form and dimension* to a community. Afterwards they can sketch their impressions, make murals and maps.

By visiting old buildings, children can begin the search into the *origins* of the community.

Trips to *new roadways* and *new buildings* can balance visits to museums and historic places so that children may trace the direction in which the community is changing.

On a *grandparent's day*, children could talk with older citizens about earlier community life.

Teachers can create an awareness of the changing environment as the *seasons change*. The changes in clothing, footwear, games and household duties can be discussed and then recorded in a variety of ways.

Simple *daily events* may provide a basis for activities. For example, if a girl receives a Japanese doll as a gift or a boy has watched an Italian soccer team play on a local sports ground, these experiences may generate interest in beginning studies of child-life in Japan or sports in Italy.

Through experiences with traffic safety campaigns, fire prevention, litter removal, road repairs and local elections, children can become aware of *community services*, and of the *duties of citizens*.

Since many communities are peopled by *ethnic groups*, school children may have ready access to overseas periodicals, to the dance and drama of diverse cultures, and to conversation with individual men and women familiar with other languages.

Discussions of the *wise use of community resources* can lead to activities through which children make a contribution to the conservation of clean air, water and landscape.

While the life of the community is the prime focus of the work in Year Two, there will be occasions when links between the home community and other communities, provinces, and even other countries will emerge. When a centenary *celebration* is taking place in a nearby community or province, when a *world event* is table talk or when a visiting *celebrity* brings another aspect of the world to the home community, the syllabus takes on a fresh dimension.

Phase Two: Life in Other Communities

Through direct experience, children in Phase One have learned a great deal about their environment, the people of the neighbourhood and themselves. They have begun to see the web of relationships between man and man, and between man and his planet. For most of his life the young child has been living and learning within walking distance of his school, and home, and only occasionally have the distant world and the world of the past imposed themselves on the "here and now".

In Phase Two his horizon widens and there is room for all the diversity that makes different communities distinctive. Each child now has an opportunity to study communities beyond his own.

Phase Two is divided into two segments: *Life in Canadian Communities* and *Life in Communities Abroad.* This arrangement is intended to facilitate the planning of curriculum over a two-year period. However, the planning can remain flexible so that the basic plan may be modified. If unexpected events centred in the neighbourhood, the province, or parts of the world beyond become dominant and of concern to boys and girls, major modifications may be necessary.

According to Jean Piaget, children develop through somewhat distinct periods. One of these is the stage of *concrete operations.* Most children in Year Three and Year Four are at this stage, where each has, to use Piaget's words, "a fairly stable and orderly conceptual framework which he systematically brings to bear on the world of objects around him." These children are not, however, at the stage of formal operations, where they could deal well with abstractions.

Fortunately there is a great variety and abundance of learning materials for studying the life that children, youth, and adults lead in distant communities. Through videotape or film the student can see the treetopper of British Columbia, the railway sectionman of Schreiber, or the Indians of the Amazon. Through radio and tape-recorder, he can hear Indian children of Brantford speak of their aspirations and activities. Through books and pictures, he can explore what it was like to be a Kelsey, a Cartier, a Pasteur or a Tom Thomson.

During Year Three, the focus is on representative Canadian communities, some of them in Ontario. Each community will be chosen because the children find it interesting, and its study will enhance a broader understanding of Canada. Each unit will provide the framework for development of the skills of mapping, reading, organizing, interpretation, research and reporting.

Children will find that communities are set in time, as they are in place. Toronto may mean Brulé as well as Simcoe, Montgomery's Tavern as much as Nathan Phillips Square, and St. James' Cathedral as much as the St. Lawrence Centre.

Especially in Year Three, contemporary community events may lead to discussions and activities related to laws and by-laws, to elections and appointments, and to meetings of governing bodies, local, provincial and national. The recognition of the rights and duties of citizens may emerge as naturally from a newspaper headline as from a planned visit to a civic building but such important topics should not be left to chance.

During Year Four, the focus widens to the study of life in communities beyond Canada. The elements of people, place and change in the world-wide community provide an endless diversity of themes. Through inquiry, a child can widen his experiences with food, clothing, dwellings, work and recreation. He can compare the lives of overseas children with his own and probe the reasons for the differences. Children will find that overseas communities are linked with personages who have become legendary. The roster could include Mahomet, Christopher Wren, Joan of Arc, Peter the Great and St. Francis of Assisi.

As was mentioned for an earlier phase, the class activities are designed for a two-year span. The transition in Phase Two from a study of Canadian communities to communities abroad can be made at any convenient time, not necessarily at the end of Year Three.

Life in Canadian Communities

If the choice of some communities to be studied is made in advance, extensive resource materials may be located and brought together. However, teachers and children will likely wish to make some selections during the school year according to national, provincial and local current events, such as centenary celebrations or the opening of civic centres.

Diverse kinds of communities are listed below so that children may get an idea of the variety that is Canada. For each community considered, there will be many approaches, all natural to the situation and each leading to its own packet of knowledge, its own inventory of skills and its own satisfactions. Each unit of work will lead to different culminating activities. Quite clearly there is no expectation that a class would make case studies for all the topics listed below, but no limit is proposed here.

Aside from the local community which was investigated in Phase One, *the past and present of another Ontario community* might prove fascinating. Throughout Ontario there are many museums, historic sites and restorations which could be visited and studied.

Rural children might be interested in studying their nearest *urban community*. In all cases, the two-way relation of the city and its rural hinterland should be kept in mind. For children of both rural and urban backgrounds, the study of an urban community could lead to a study of buildings, a study of the different steps in the manufacture of some product or a study of various kinds of employment.

Life in a farm community is now much different from that of pioneer times. City children might identify several kinds of farms that produce the food on their own dinner tables. The processes of food production as well as the interdependence of farm and city people could come to light through research and discussion.

Life in one Canadian Shield community might lead to a study of the resources of the North and its special problems. Children might consider such aspects as the length of winter, the closeness of man to the natural setting, the problems of providing medical and social services, the contributions of ethnic groups, and the hazards of dependence on single resources such as ores, forests or animal life.

Life in a fishing community could lead to a study of inland waters or the oceans and to the many aspects of water transportation. Children may want to know details of the daily life of a fisherman. Who owns the boats? What games do children play? What do people eat? How much does a fisherman earn? How much does a ship cost?

Life in a northern community such as Eureka, Baker Lake, Moosonee, Inuvik, or Yellowknife could be the starting point for learning about the special skills of Indians or Eskimos, the significance of good transportation, and the resources that support the growth of the northern population.

Life in a western ranch or prairie community has its own story of landscape, climate, history, occupations and adventure. Wallace Stegner writes in *Wolf Willow*: "Seldom anywhere have historical changes occurred so fast. From grizzlies, buffalo, and Indians still only half possessed of the horse and gun, the historical parabola to Dust Bowl and near-depopulation covered only about sixty years. Here was the Plains frontier in a capsule, condensed into the life of a reasonably long-lived man."

Life in an early settlement can show how Europeans came to Canada, changed their manner of living and struggled to establish a new civilization. The 17th century settlement along the St. Lawrence River and in Huronia are examples.

Life in a suburban community remains different from life in a metropolitan community. How a dormitory community depends upon the nearby urban city could be investigated.

Life in a capital city, either national or provincial, links government with daily life. Children will have their own questions. Who made the city the capital? Why? Who uses the government buildings? What marks a capital city? What does a legislator do? What is a party? What laws affect me?

Life in a tourist or vacation community has interesting seasonal variations. Characteristics of such places as Banff, Percé, Niagara Falls or other well-known resort areas might be worthy of investigation.

Life in an industrial community is a theme that embraces production methods, management practice, labour union activities and service to the consumer. Children will likely have their own inquiries regarding the life and work of plant personnel.

Life in Communities Abroad

In Year Four children are encouraged to find out how people lived and worked in other times or in far-away places. One way to achieve this new expansion is to choose a particular community having one major characteristic, then research it in much the same manner as it was done for distinct Canadian communities earlier. These could be called sample studies or case studies, and again children will benefit from having a part in making this choice.

It should be noted that no systematic study of an area is proposed; area studies are suggested for Phase Three. The following paragraphs suggest communities for sample studies. Clearly a teacher and his class will need to select only a few from the large number listed.

A visit to a zoo or a circus where apes, monkeys and sloths are seen might be the beginning of a study of *life in a tropical forest.*

A newspaper clipping about Norilsk would make a starting point for the study of a *tundra community.*

A picture of a walled castle such as that at Caernarvon or Chateau Gaillard might start a study of *life in a medieval community.* Children could look into the occupations of the artisans of the Middle Ages and their amusements or the manner of dress of knights and peasants.

The *hot deserts* of Asia or Africa are especially interesting to children because of the culture of the people, their history and the continual struggle for survival. With some assistance children could relate dunes, seasonal streams, mirages and irrigation to their own experiences.

After seeing reproductions of cave paintings, children may become interested in making tools and weapons like those of a *stone-age community.* This might lead to the study of present day primitive communities or to a visit to excavations in nearby kitchen middens.

Some children are interested in celebrities such as Socrates Henri Dunant, Joan of Arc, Robert Scott, Julius Caesar, John Caxton, Robert Bruce, Isaac Newton, George Stephenson, Florence Nightingale, Leo Tolstoi, Marco Polo, Abraham Lincoln, Paavo Nurmi and Miguel Hidalgo. A study of a great man could be reinforced by a study of his *contemporary community.*

In the fiords of Iceland and Norway, one finds the *mountainous sea-coastal community.* Here land and sea contribute to earning a livelihood. Children may investigate how roads are built, what fish are caught and what schools are like.

Individual works of architecture such as the Parthenon, The Coliseum, the Kamakura Daibutsu, the ruins of Pompeii, or Mayan temples could lead to a study of life in an *ancient community.*

Seeing a film or reading an article about Serengeti National Park could lead to a study of a *grassland community.* Children may be interested in the Masai people and their nomad life.

A manufacturing and commercial community such as Rotterdam or Osaka depends on raw materials, labour, power and good transportation. Children could find out about the daily life of a worker and social life in such a city.

Students could make travel guides for Edinburgh, Rome, London, Athens, Christchurch, Kyoto, Reykjavik, Capetown, Kiev, Cairo, Bergen, Port of Spain, Cracow, Shanghai or Detroit. In the process of assembling information, they could learn much of *life in a modern city.*

Phase Three: Area Studies of People Throughout the World

In area studies, children have an opportunity to examine the human, physical, cultural, social and economic characteristics that make areas distinctive. During the Years Five and Six, teachers and children may select specific areas for the purpose of exploring how people live. The particular choice will be made by the children and teacher, bearing in mind the contemporary significance of the area and its people, the learning materials available and the degree to which its study will achieve the particular ends of society, teacher and pupil.

Choice may be made from several viewpoints. An area may be chosen on a political basis because as an independent state, as a province, or as a group of similar countries it yields interesting observations. An area may appear as a natural entity – for example, a river basin, a plateau or a desert region. An area may have a language base such as the Latin American republics.

In area studies pupils may begin in the present and then delve into the past in order to reach adequate explanations and to get a clearer understanding, for the world of our decade makes better sense when related to the past. On the other hand, they may wish to start with the past and trace the significant events until they reach the present with all its complexity.

The lives of men, women and children in a selected area are linked with hundreds of circumstances, some going back to the past and some clearly visible today. The physical features of an area, such as mountains, woodlands, marshes and waters, sometimes facilitate man's ventures and sometimes hinder them. Nor can life in an area be understood unless one knows something of a people's laws and literature, culture and spirit, resources and amusements. Since area studies can become very complex, teachers should encourage the pupils to approach these studies in a way natural to their age and maturity.

By the time children are working in Phase Three, they have much experience and have already learned many skills. However, at this age they are ready to learn additional techniques and to master some of the essential skills of the sociologist, geographer, writer, historian, artist, scientist and student. As in earlier years, these skills are not learned because the children want to be historians or writers or the rest, but because they need them to do well what they want to do. Composing a travel-guide, painting a map of early Montreal on a wall, photographing the houses on a nearby street, writing a letter to a pen-pal half a world away, examining river water for sediments – all these demand skills, persistence and a measure of creativity.

In Year Five, the eastern half of the world is designated as the locale for area studies. This is a vast area where most of the world's inhabitants live, where there is the longest record of man's culture and within which there is a great variety of geographic, social, economic and political systems. Areas may be selected from diverse societies and regions such as England and China, the U.S.S.R. and Indonesia, Japan and India, Australia and Finland, and South Africa and Egypt. While this eastern hemisphere is to us the more remote hemisphere, it contains the ancestral cultural homelands of most of Canada's peoples.

In Year Six, it is from the western hemisphere that places for area studies are selected. As has been mentioned earlier, the area studies in Phase Three are designed as a continuing two-year program. Obviously, if current events bring an area into daily prominence, that area could be selected for study regardless of original plans.

Area Studies of People in the Eastern Hemisphere

One clear question is posed to the boys and girls as they begin Phase Three, "How do people in the eastern part of the world live?" Month by month, as more areas are studied and as different approaches are taken, they know more about how easterners live, feel, work and play.

Quite possibly children have already learned much concerning people, places and events in the eastern hemisphere. This will influence their choice of topics in Year Five as well as the approach taken by teacher and class. The following paragraphs suggest starting points. No specific number of area studies is proposed here.

Some children will have relatives in Hungary, Portugal, Italy, England and other areas. A *homeland study* can begin with interviews and discussions with parents and other relatives.

Food, furniture and pottery from across the Atlantic are often imported and available in stores and markets. Beginning with products, studies can be made of their *places of origin and the processes of production*. For example: Caciocavallo, Edam, Esrom, Roquefort, Stilton and Tilsit cheeses come from parts of Italy, the Netherlands, Denmark, France, England and Germany.

New air routes to Japan may recall the long story of *voyages by sea and land* in discovery of the Orient or the importance of *contemporary trade* between Canada and Japan.

The *early societies and present-day societies* of the Nile River, the Yellow River, the Indus River and the Tigris-Euphrates basin are revealed in both ancient artifacts and structures and modern ones.

Groups of students may work on segments of a *contemporary theme* such as *children's games in the eastern hemisphere*, *children's books for four continents* or *air transport within Asia and Europe*.

A comparison of *ancient maps* with modern ones should make students appreciate the work of explorers and the amount of knowledge that man has accumulated during the intervening centuries. Further, children might find out how the early Greek and Roman cartographers obtained their information and might trace how our knowledge of continental coastlines gradually improved, how our knowledge of mountain ranges and main rivers developed, and even how styles and symbols in cartography have evolved.

A study of an *achievement*, current or past, can be set in an area study. Children who know of achievements may realize that there are other Everests to climb, more Aswan Dams to build, many more marathons to run, and plenty of scope for new Jules Vernes and perhaps even a second Leonardo da Vinci.

Technology has much to offer as a starting point. How could a Chinese junk sail against the wind? Why have steel works and timber chemistry plants grown up around the Bratsk power station? How can butter and mutton be brought to Ontario from New Zealand?

Young children are often troubled by the contemporary problems of pollution, poverty, oppression, disease, illiteracy, anarchy, hunger, prejudice, war, cruelty and injustice. Since *social and political issues* are brought to today's schools, they are a part of social studies. Every area has its problems and successes whether the place be England, France, Viet Nam, Ceylon, Korea, Sweden, Switzerland or Greece.

A study could be made of *famous people and their homelands*. Children could select persons who interest them – for example, Hans Christian Andersen, Winston Churchill, Maria Sklodowska Curie, Anne Frank, Mahatma Gandhi, Beatrix Potter, Albert Schweitzer, Jan Sibelius.

Press reports of *United Nations activities*, including UNICEF, could initiate studies of its service to mankind.

Area Studies of People in the Western Hemisphere

In Year Six most schools will probably sample three areas in our hemisphere: Latin America, the United States and Canada.

To the child, the program poses one main question: "How do people in the western hemisphere live?" As he studies life in area after area he will develop a growing understanding of the web of relationships among people, institutions and the face of the Americas.

From the hundreds of areas that could be studied, a class with its teacher can select a few that promise to be most rewarding. Some suggested starting points are indicated in the following paragraphs.

Study could centre around the *life of people* in a rubber growing community or in the high Andes.

South America with its many countries lends itself to an *area study*. Canada has strong trade ties with Venezuela, Argentina, Peru, Brazil, Guyana and Trinidad.

As a project, groups could portray *contemporary aspects of Mexico* such as its terrain, its resources, its people, its culture and its sports.

Through classroom-to-classroom correspondence and through other means, Ontario children are already developing contacts with children in some *Caribbean islands*. Any one island group could form the basis for area study.

For Ontario schools near a border, a special study of the *bordering state* could be made. How was it settled? What kind of work do the people do? What are their pastimes and sports? What famous people have come from the state? What happens on a voting day? What relations exist between Ontario citizens and the state citizens?

Through long-term newspaper and magazine study, Canadian children could follow *contemporary life in America*.

Groups could prepare a documentary or a pictorial representation of *great events in American history*.

Booklets could be prepared on *memorable Americans*, the *landscape of the U.S.A.* or the *history of an industry* such as the ones centred on cotton, aerospace or the cinema.

Groups could research and write *stories from the history of Canada.*

A book of Canadian people could be prepared describing the times and lives of men and women like Lord Beaverbrook, Emily Carr, Samuel de Champlain, Madeleine de Verchères, Gabriel Dumont, Simon Fraser, Paul Kane, Sir Wilfrid Laurier, Sir John A. Macdonald, William Lyon Mackenzie, Agnes MacPhail, Hon. J. A. D. McCurdy, Louis Riel, Robert Service, John Graves Simcoe.

Booklets with such titles as "Newfoundland Today" or "Manitoba After a Hundred Years" could be prepared with the object of describing the *everyday life of the people.*

A present-day study of *housing* or *kinds of farms* could mirror life in Canada.

Children could prepare as a group contribution *a book of exploration* describing how their own area was discovered, explored and settled.

A group study of *present-day Ontario* might show how man has been influenced by the environment and how in turn man has changed the face of the province.

A series of studies of *life in Ontario* could show how the social and cultural activities of the people have changed since the coming of the Loyalists.

After field trips, children in Southern Ontario could sketch landscapes and photograph land features that reveal the *structure and story of the land and the Great Lakes.*

Particularly at times when there are stirring events in parliament, the legislature or local councils, the relation between the community and the governing bodies can be explored. Newspapers, magazines, and TV can introduce the study and serve as continuing sources of information. Whatever the aspects studied, children will have a chance to know, to feel and to live the *role of the citizen.*

Bibliography of Professional Books

ALLEN, G. *Social Studies in Primary School.* London: Macmillan & Co., Ltd., 1960.

BREHM, SHIRLEY. *A Teacher's Handbook for Study Outside the Classroom.* Columbus: Charles E. Merrill, 1969.

CARPENTER, HELEN (ed.). *Skill Development in Social Studies.* Washington: National Council for the Social Studies, 1963.

CHASE, LINWOOD W. *A Guide for the Elementary Social Studies Teachers.* Rockleigh, N.J.: Allyn & Bacon, Inc., 1969.

DANIHER, E. L. and C. R. DUNPHY. *Teaching the Social Studies.* Vancouver: J. M. Dent & Sons, 1961.

DOUGLASS, M. P. *Social Studies: From Theory to Practice in Elementary Education.* Philadelphia: J. B. Lippincott Company, 1967.

FRASER, DOROTHY MCCLURE. *Social Studies Curriculum Development: Prospects and Problems.* Washington: National Council for Social Studies, 1969.

HANNA, PAUL R., ET AL. *Geography in the Teaching of the Social Studies.* Boston: Houghton Mifflin Co., 1966.

HARDWICK, FRANCIS C. *Teaching History and Geography.* Toronto: W. J. Gage Ltd., 1964.

HODGETTS, A. B. *What Culture? What Heritage?* Toronto: Ontario Institute for Studies in Education, 1968.

JAMES, LINNIE B. and LAMONTE CRAPE. *Geography for Today's Children.* New York: Appleton-Century-Crofts, Inc., 1968.

JAROLIMEK, JOHN. *Social Studies in Elementary Education.* 2nd ed. New York: Macmillan Company, 1969.

KENWORTHY, LEONARD S. *Social Studies for the Seventies.* Waltham, Massachusetts: Blaisdell Publishing Company, 1969.

LOGAN, LILLIAN M. and G. T. RIMMINGTON. *Social Studies: A Creative Direction.* Toronto: McGraw-Hill Company of Canada, 1969.

MICHAELIS, JOHN U. *Social Studies for Children in a Democracy.* 4th ed. Englewood Cliffs: Prentice-Hall, Inc., 1968.

PERRY, G. A. (ed.). *Approaches to Environmental Studies. Teachers' Guides, Books 1 and 2.* London: Blandford Press, 1970.

SAUCIER, ROGER. *Comment enseigner l'histoire.* Montréal: Centre de Psychologie et de Pédagogie, 1966.